

**Systems for an Interservice Exercise Measure
and Feedback System: Integrated Task List for
The Air Ground Training Feedback System**

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BDM Federal, Inc.

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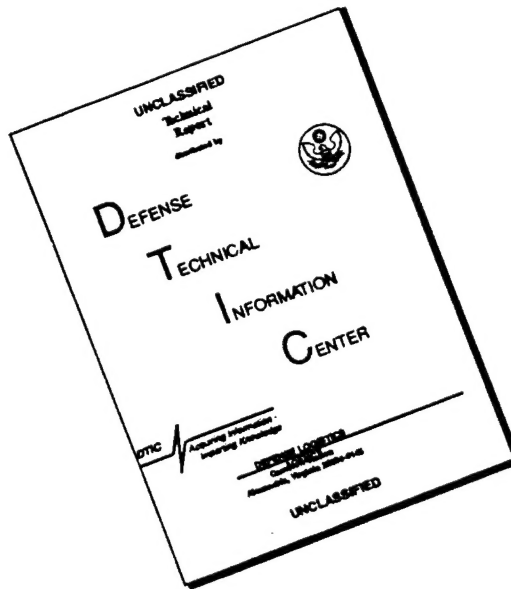
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13. ABSTRACT (Maximum 200 words) The foundation for when, how, where, and why CAS is utilized is determined by the ground maneuver component which is using CAS in support of its mission. Hence, the understanding of the ground maneuver mission sequence and the identification of the battle tasks and linkages is critical to the effective use of CAS. This report will address the linkages of the tasks performed by the air liason team to the battle tasks performed by the ground maneuver units engaged in defensive and attack missions. This report shows the interactive nature of CAS tasks as they are applied in support of the ground maneuver component. It illustrates the parallel and sequential steps necessary for the synchronization of these components and their subordinate tasks on the battlefield. Because this system mirrors the training feedback process used at all the Combat Training Centers, it allows for a more comprehensive tactical analysis than other methodologies and can serve as a source training document.				
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INTEGRATED TASK LIST FOR THE AIR GROUND TRAINING FEEDBACK SYSTEM

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I. INTRODUCTION

This document is the fifth in a series of interim reports in support of Army Research Institute Contract MDA903-92D0075. The purpose of this study is to identify the critical synchronizing aspects of Close Air Support and develop a training and assessment vehicle to assist in enhancing the utilization of Close Air Support operations for both ground and air forces. The overall concept for this study is shown in Figure 1.

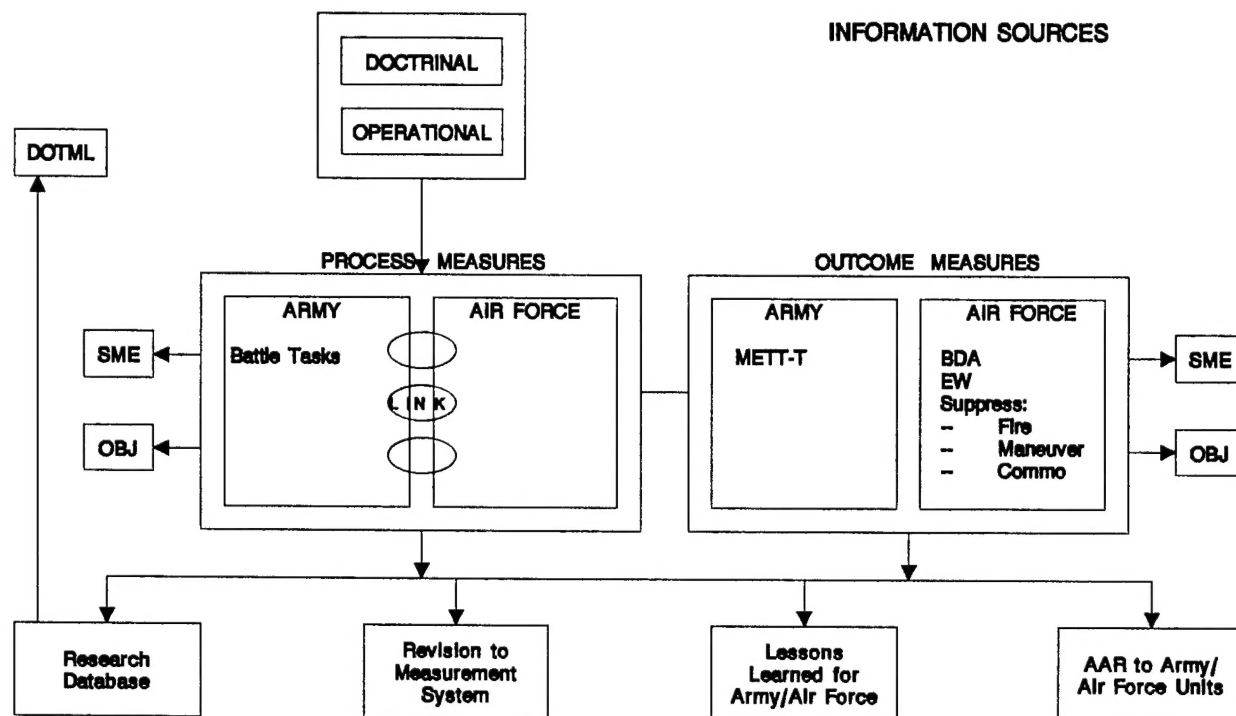


Figure 1: Schematic organization of the battle task and outcome measurement model for the Air-Ground Training Feedback System.

There are three primary components of air-ground operations: The ground forces, the air liaison team attached to the ground force, and the air forces themselves. Previous reports identified those critical combat tasks and linkages necessary for the application of Close Air Support (CAS) from the perspective of the Air Forward Air Controller (AFAC) and the Tactical Air Control Party (TACP). That, however, only provides a partial list of actions necessary for the successful application of Close Air Support.

The foundation for when, how, where, and why CAS is utilized is determined by the ground maneuver component which is using CAS in support of its mission. Hence, the understanding of the ground maneuver mission sequence and the identification of the battle tasks and linkages is critical to the effective use of CAS. This report will address the linkages of the tasks performed by the air liaison team to the battle tasks performed by the ground maneuver units engaged in defensive and attack missions.

The development of these linkages will enable us in subsequent reports to develop a training feedback system for Close Air Support that can be integrated into an overall performance based feedback system for all elements of combat power. In this report we have structured the task lists and linkages to permit their integration with other training feedback systems currently in use or under development, such as the Combined Arms Battle Task Mission Books (CALL, to be published 1994) and analytical tools in use at the Combat Training Center Archive.

II. THE GROUND MANEUVER MISSION SEQUENCE

A maneuver brigade conducts a variety of combat missions, two of which are relevant to CAS utilization: Offensive operations and defensive operations. Both these operations include a planning, preparation, and execution phase and involve the continuous synchronization of Battlefield Operating Systems (Intelligence, Maneuver, Fire Support, Air Defense, Mobility/Counter mobility/Survivability, Combat Service Support, and Command & Control) to insure mission success. The following outline highlights the sequence of ground maneuver activities that relate to the application of close air support.

A. Planning Cycle

The planning cycle is initiated when the brigade receives the mission Warning Order. Based on the information in the Warning Order, the brigade commander issues his initial planning guidance and intent to the brigade staff. The brigade staff then begins developing their own general plans, or staff estimates, which outline how they will support the brigade mission. One of the more critical aspects of this initial staff planning is the development of the intelligence picture, referred to as the Intelligence Preparation of the Battlefield (IPB). The IPB effort will attempt to learn as much about the enemy situation (force type, capabilities, disposition, location, etc.) as possible.

Information derived from the IPB, which is part of the overall METT-T (Mission, Enemy, Friendly Troops, Terrain, and Time) analysis, is then used to conduct the wargaming, or Course of Action (COA) analysis. The wargaming process is essentially a brainstorming session among the staff to determine which of several potential COAs provides the best opportunity for accomplishing the mission. Once a COA is determined, staff planning then focuses on how to support the plan.

The fire support effort is designed to support the scheme of maneuver by enhancing direct fires and disrupting or neutralizing the enemy's ability to bring fires on friendly forces. To do this, indirect fires are targeted on known and likely enemy positions and prioritized and sequenced so that they may be used at the most opportune time. The fire support plan includes all aspects of indirect fires available to the ground maneuver unit: Artillery, mortars, naval fires, helicopter, and close air support assets.

The air defense plan is developed to deny enemy air assets the ability to disrupt the planned scheme of maneuver. Air Defense Artillery assets are positioned throughout the unit based on the commander's priorities and where they can best provide umbrella coverage of the ground maneuver force.

The use of Army aviation assets (lift and attack) is coordinated to ensure appropriate integration with both the maneuver and fire support plan. Since Army aviation can be utilized in both these capacities, it is important that its roles and missions are clearly defined and synchronized with all affected battlefield operating systems (BOSs) within the ground maneuver unit.

Once the independent staff analysis' and the staff/BOS integration is complete, a formal Operations Order is presented. This order states the how the ground maneuver unit and its supporting assets plan to fight the battle.

B. The Preparation Process

In addition to a wide variety of readiness activities to ensure that the unit is capable of conducting the mission, the commander and staff continuously review the plan. Appropriate changes are made as necessary to reflect new information. This new information is derived from the actual status of unit readiness, available combat power, adjustments based on rehearsals, and intelligence updates. Since each modification to the order causes a ripple effect through all other BOSs, coordination among BOSs is continuous.

The fire support plan, in particular, typically reflects a number of refinements during this period. Targeting, for example, becomes more precise as the intelligence picture becomes clearer. This, in turn, has an impact on required munitions, target priorities, and target and fire sequencing.

C. The Execution Phase

In an attack, the attacker moves from an assembly area to the line of departure. Beyond the line of departure, the attacker maneuvers to the objective area. Once there, the attacker assaults to seize the objective. The defending unit seeks to halt each consecutive step of the process. In either case, however, the fire support components will provide the initial fires on the opposing force and will continue engaging through the balance of the battle. The ability to bring effective indirect and airborne fires on an enemy force becomes more complex as the distance between the forces narrows and the decision cycle and reaction time for the ground commander speeds up. At a point when the ground situation is most chaotic, the requirement for accurate targeting is the most necessary. The accuracy and effectiveness of these fires, to include CAS, can be directly traced to the planning and preparation that preceded the execution.

III. DEVELOPMENT OF THE GROUND MANEUVER CRITICAL COMBAT TASKS

The ground maneuver mission sequence provides the overall flow of events (Plan, prepare, and execute) and the general organization of critical activities (Battlefield Operating Systems). Using this conceptual framework it is possible to establish the parameters for the development and integration of ground maneuver, TACP (Tactical Air Control Party), and AFAC (Air Forward Air Controller) battle tasks. Figure 2 shows the overall relationship between the ground maneuver component and the air component.

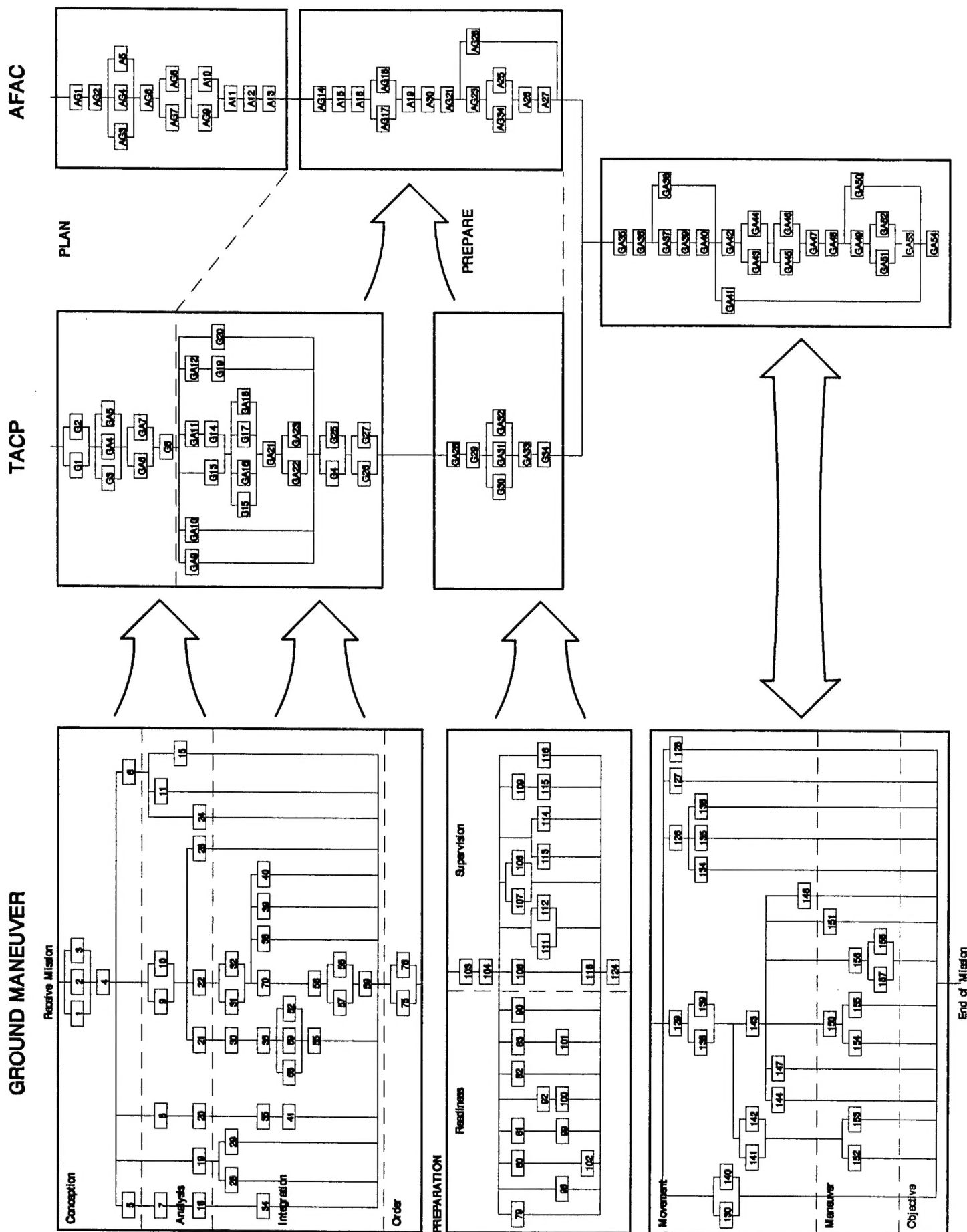


FIGURE 2: Interactive network of close air support battle tasks for air and ground components

A. Air Component Battle Tasks

The methodology for developing the air component tasks is discussed in detail in previous reports (Root, 1993). Appendix A shows the TACP and AFAC tasks in a flow chart configuration as they are sequenced through the battle flow framework of plan, prepare, and execute. Appendix B is a list of the TACP and AFAC battle tasks.

The planning actions of the ground unit provide the initial input to the TACP and are interactive between the two components. In order to satisfy this relationship, the TACP must be a proactive member of the ground unit planning staff from the inception of the mission. This allows for the continuous input-process-output of CAS capability and integration throughout the planning phase.

Similarly in the preparation phase, the TACP must participate in the various readiness and supervision activities necessary to confirm all aspects of the plan. Since the TACP has a thorough understanding of the mission and how CAS is to be integrated into it, there is far less confusion when adjustments and modifications are made. Because both the planning and preparation phases are dynamic by their nature, it is essential that the TACP be incorporated in the process at the beginning.

The execution phase is the synchronization of all components into a team effort and is the result of the integrating actions that occurred during the planning and preparation phases. This phase also incorporates two more elements of the air component - the AFAC and the fighter aircraft. The AFAC, if available, must be briefed on the ground mission in enough detail to ensure the AFAC's understanding of what is expected of the fighter aircraft. In any event, whether the attack aircraft are controlled by an AFAC or the TACP, the fighters must also be briefed as to their role in support of the ground maneuver force.

CAS is employed as an element of the fire support system which in turn supports the ground maneuver plan. In addition, CAS has the unique ability to see the battlefield from a perspective not available to the ground commander which provides an embedded intelligence capability that needs to be routinely exploited. The air component task list reflects these two primary contributions of CAS assets: The additional combat power at a critical time and place, and the intelligence gathering capability inherent in the aviators view of the battlefield. All these factors are reflected in the air component task list shown in Appendix A and elaborated on in Appendix B.

B. Unit Performance Measurement System

An initial set of ground maneuver critical combat task lists for platoon, company/team, and battalion task force were developed at the Army Research Institute Field Unit at the Presidio of Monterey (ARI-POM) as part of the Unit Performance Measurement System (Lewman, 1988) study. These tasks were organized by mission (defend, deliberate attack (day and night), hasty attack, and movement to contact), by Battlefield Operating System (BOS), and mission phase (plan, prepare, and execute). While brigade tasks were not included in the UPMS, due to the nature of their tactical configurations, both battalion and brigade staffs perform the same type tasks and in much the same manner. When the actions are further narrowed to a specific

function, such as the application of CAS within the fire support arena, task differences essentially vanish. Appendix C shows the UPMS tasks for defend and attack missions in a flow chart sequence similar to that used in development of the TACP and AFAC tasks.

In order to identify the linking nodes and clarify the task relationships, the UPMS tasks were placed in a matrix with the TACP tasks. This matrix (shown in Appendix D) clearly identified the synchronizing points, but it also demonstrated that many UPMS tasks were too broad and too focused on the ground maneuver aspects of a mission to provide the level of detail necessary for a comprehensive linkage to CAS issues.

C. Ground Maneuver Critical Tasks

While the UPMS tasks provide the overall doctrinal framework for planning, preparation, and execution activities, it was necessary to develop an intermediate task list for ground maneuver forces that provided the level of detail required for the integration of CAS operations. To derive these tasks it was necessary to narrow the spectrum of activities in the UPMS study and identify those actions directly involved in the application of CAS. The start point for this effort was the information requirements inherent in the already identified TACP tasks.

Conceptually, the TACP is a component of the fire support BOS (Battlefield Operation System). That is, in order for the TACP to perform its function it must receive information from some external source. That information must then be analyzed and organized into a usable form within the TACP. The TACP must also transmit information to some external component, such as the AFAC or FSE (Fire Support Element). Finally, the TACP must physically apply this information and analysis to operationalize CAS in support of the ground maneuver force.

The approach to developing the intermediate ground maneuver tasks was a four step process. First, each TACP task was analyzed to determine what information requirements were necessary to accomplish each task. Second, each information requirement was analyzed to determine who supplied the information or to whom the information was passed. Third, each information requirement was logically grouped within appropriate BOSs to form requirement clusters which were given task titles. Finally, the ground maneuver tasks were organized in a general sequence which paralleled both the UPMS and TACP mission flow. The resulting revised ground maneuver task list is in Appendix E.

IV. CAS INTEGRATION WITH THE GROUND MANEUVER MISSION SEQUENCE

There are three primary layers of tasks necessary to operationalize close air support. The foundation layer is the ground maneuver element. The intermediate layer is the TACP and the final layer is the AFAC. The tasks conducted at each level are generally sequential (plan, prepare, and execute) and are linked to each other in much the same manner as building blocks. In addition, they tend to serve three functions - input, process, and output tasks - within their respective layers.

When the layers are stacked vertically and integrated to achieve the effective

synchronization of CAS, the middle TACP layer assumes the role of a mediating agent, or translator, between the ground maneuver component and the AFAC. As a result of this three dimensional network, TACP tasks can serve several functions (receivers, processors, and producers) depending on whether the information flow is within the TACP layer or being relayed to or from the ground maneuver or AFAC levels. As an example, the ALO must be told the ground force mission (attack, defend, etc.) before he can translate that mission into specified and implied tasks which must be done by the TACP. The mission statement is given to the ALO in two forms: The ground force commander's Warning Order and through the initial mission analysis done by the Fire Support Officer. Once in possession of this information the ALO can then formulate his own mission analysis and begin to identify specific TACP mission requirements. Later, these requirements are translated into targeting information which will be given to the AFAC.

In addition, the TACP needs to impart information to the ground commander and other staff members. One TACP function is to *determine what air is available* so that both the TACP and the FSO can integrate that information into the fire support plan and identify possible additional assets and capabilities for contingency planning.

When viewed as a part of both the horizontal and vertical mission sequence matrix tasks can serve multiple functions. These tasks are involved not only in acting upon received information or disseminating information, but in interacting with other tasks to produce an external product. The TACP task of *Coordinate with Army Aviation*, as an example, requires more than a simple exchange of information but an ongoing process of ensuring the appropriate and synchronized use of assets.

V. AIR-GROUND TASK MATRIX

The integrated nature of tasks associated with the ground maneuver component and the air component can best be described as tiered, multiple circuit boards where each task is linked not only to those on the same tier but to those on the levels above and below. Appendix F illustrates the input-process-output interrelationships between ground maneuver and air component critical combat tasks. The linkage between UPMS tasks and ground maneuver tasks is shown in Appendix G.

VI. CONCLUSION

This report shows the interactive nature of CAS tasks as they are applied in support of the ground maneuver component. It illustrates the parallel and sequential steps necessary for the synchronization of these components and their subordinate tasks on the battlefield. Because this system mirrors the training feedback process used at all the Combat Training Centers, it allows for a more comprehensive tactical analysis than other methodologies and can serve as a source training document.

This document also provides the basis for examining, in detail, the tactical readiness of a unit through doctrinal field measurements as opposed to deriving the readiness level by examining structural, organizational, and discipline factors. This, in turn, allows for more focused and specific studies and analysis than have been practical in the past. Many similar studies have already been conducted at ARI-POM and elsewhere. They have provided a wealth of data both to NTC cadre to support their training, and to a wide variety of other Army commands and agencies.

As a training document, it provides an outline of the critical actions that must occur for mission accomplishment. While it may not reduce the scope of unit training activities, it is designed to reduce the magnitude and provide the commander with a list of the high-payoff training tasks with which to focus training.

In summary, this integrated task list for close air support was developed as one step in designing a mechanism to enhance unit tactical training and as a basis for a research which could identify and address systemic issues and trends. Subsequent reports will discuss outcome measures in the NTC/AWI training environment, data collection instruments and their immediate and long range training utility, and archive capability.

VII. REFERENCES

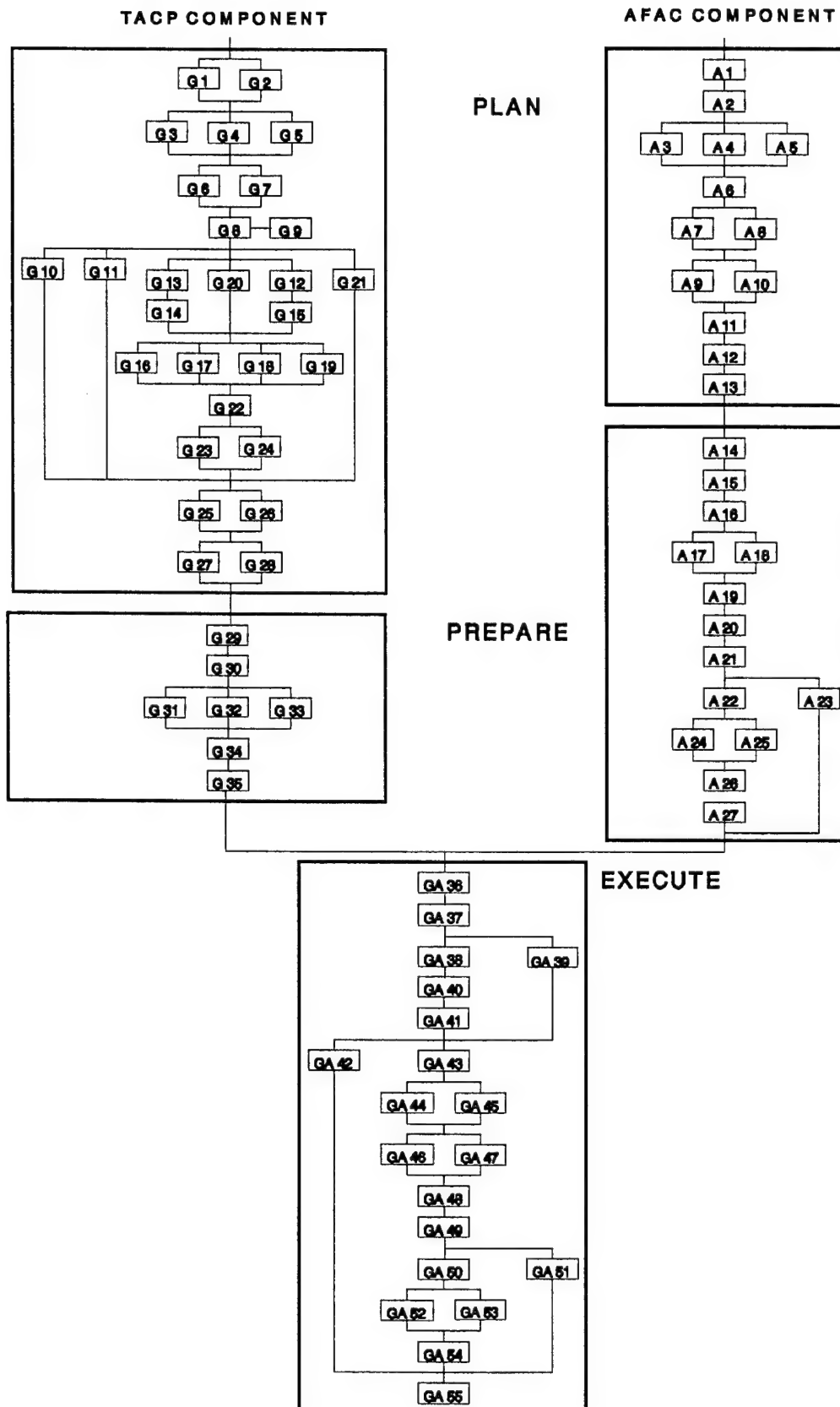
- Lewman, T. J. (ed.), (1994). Combined Arms Battle Tasks (Coordinating Draft): Battalion Task Force Deliberate Attack, Research Product, Presidio of Monterey, CA: Army Research Institute.
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APPENDIX A

TACP and AFAC Task Sequence Flow Charts

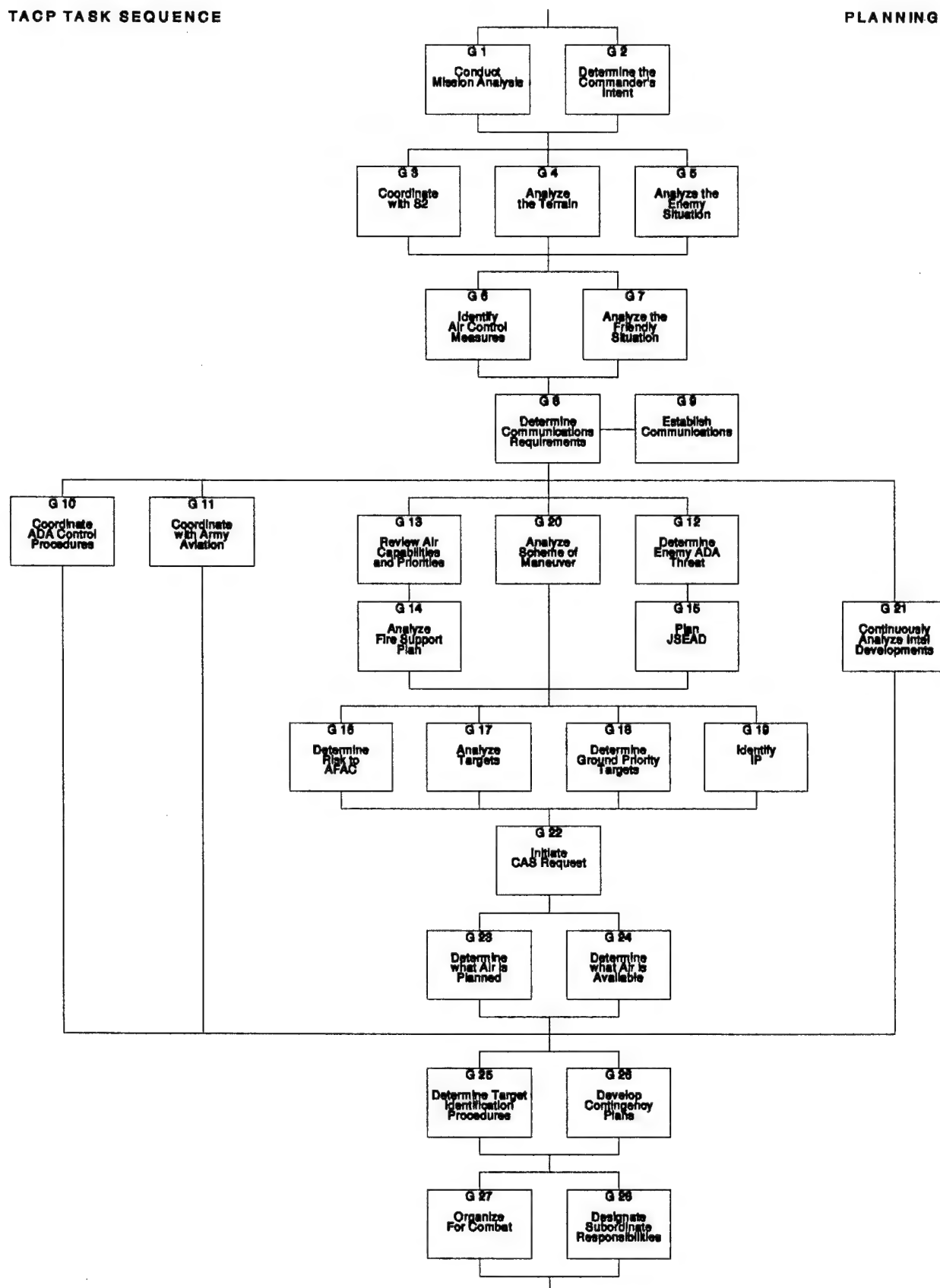
The following charts show the sequential flow of tasks performed by the TACP and AFAC in the conduct of close air support. Figure A-1 shows that the TACP and AFAC perform parallel, but independent, tasks in the planning and preparation phases, while they perform interdependent tasks in the execution phase. Figures A2-A6 expand each phase of the flow chart to show task titles. Appendix B describes each task in greater detail.

TACP AND AFAC CLOSE AIR SUPPORT TASK SEQUENCE



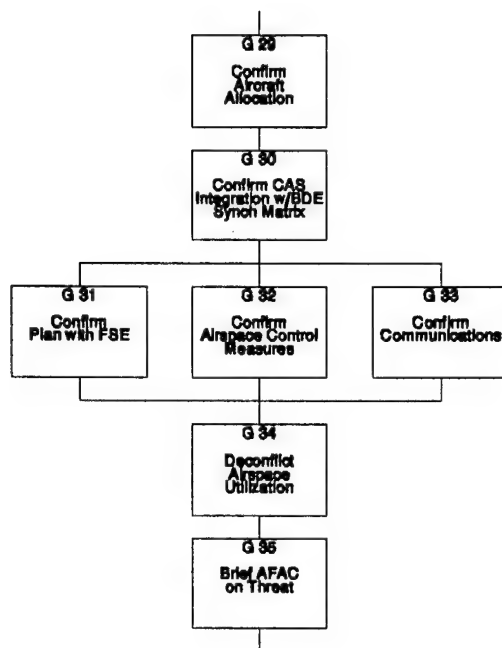
TACP TASK SEQUENCE

PLANNING



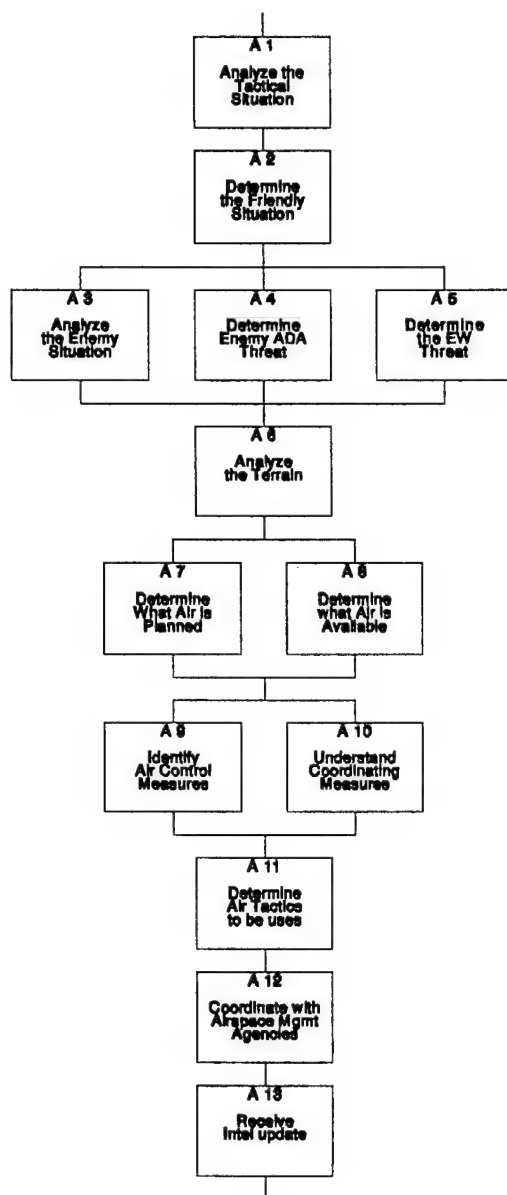
TACP TASK SEQUENCE

PREPARATION



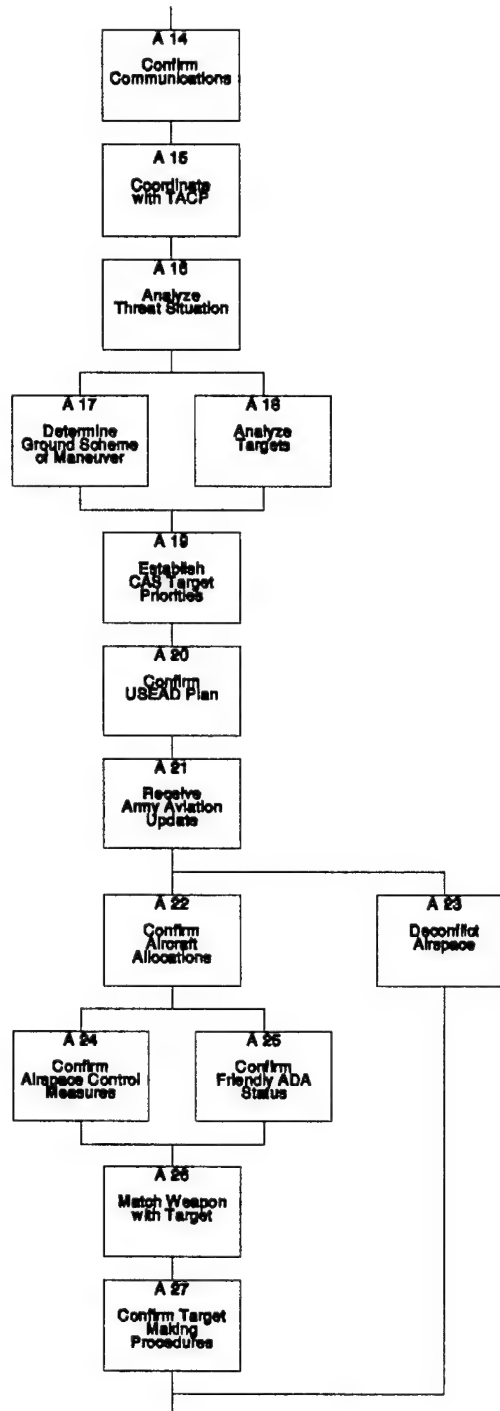
AFAC TASK SEQUENCE

PLANNING

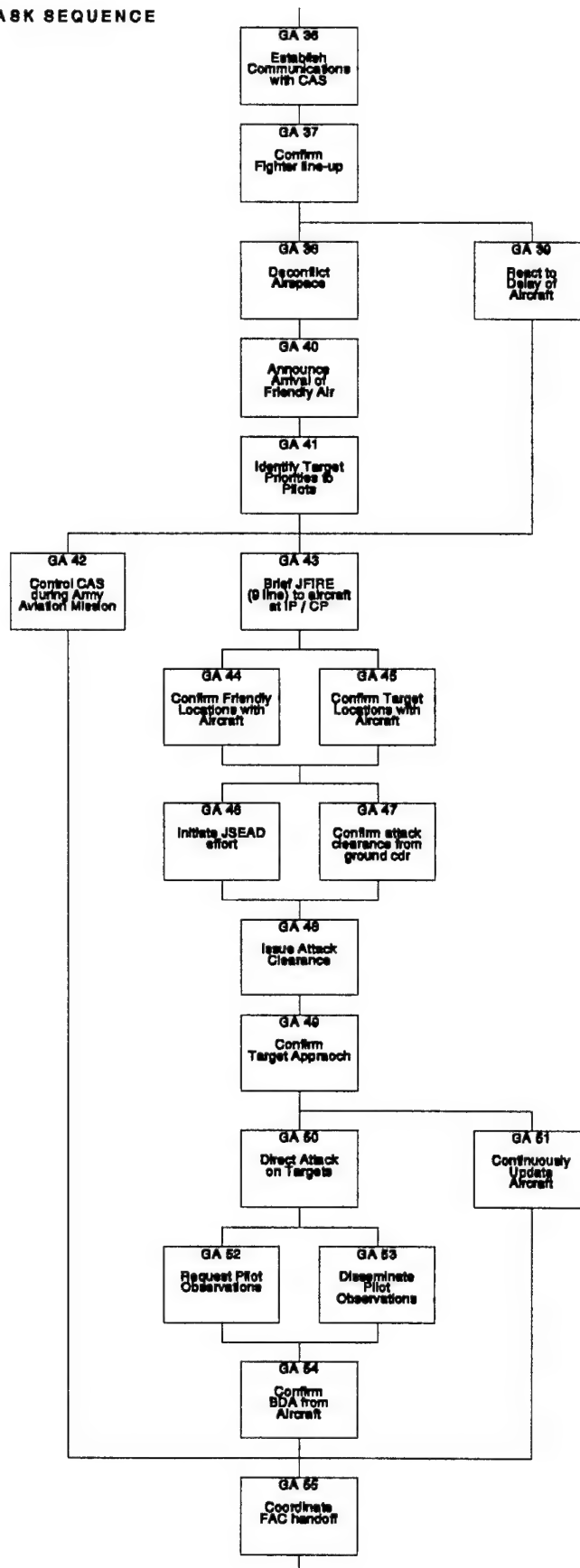


AFAC TASK SEQUENCE

PREPARATION (On Station)



AIR/GROUND EXECUTION TASK SEQUENCE



APPENDIX B

Task Descriptions for TACP and AFAC

This appendix lists the tasks shown in performance sequence in Appendix A and identifies doctrinal sources for each. In addition, sub-tasks are listed to provide a fuller description of each task. Specific source documents for each task are listed with the task. A complete list of source publications for all tasks is listed below.

TACM 2-1 Tactical Air Operations (Ch 4)
TACM 3-1 VI General Planning and Employment Considerations
TACM 3-1 V8 Forward Air Controller
TACR 55-45 Tactical Air Force Headquarters and the Tactical Air Control Center
TACR 55-46 The Tactical Air Control System (TACS) - Air Support Operations Centers (ASOC) and Tactical Air Control Parties (to be replaced by ACC 55-8)
TACP 50-20 (FM 90-21) JAAT Multi-Service Procedures or the Joint Attack Air Attack Team Operations
TACP 50-22 Tactical Air Control Party/Fire Support Team Close Air Support Operations
TACP 50-28 (FM 90-20) J-Fire Multi-Service Procedures for the Joint Application of Fire Power
TACP 50-36 Joint Concept and Procedures for Close Air Support in the Rear Battle
TACP 50-39 (FM 90-17) Beacon Multi-Service Procedures for Radar Beacon Operations
TACP 55-51 TACP Hand Book
MCM 3-1, V3 Mission Employment Tactics: Tactical Employment A-10
MCM 3-1, V5 Mission Employment Tactics: Tactical Employment F-16
MCM 3-1, V8 Mission Employment Tactics: Tactical Employment AFAC
MCM 3-3, V8 Mission Employment Tactics for Airborne Forward Air Controller (AFAC) and Tactical Air Control Party (TACP)
AFM 1-1 Basic Aerospace Doctrine of the United States Air Force
FM 1-111 Aviation Brigade
FM 6-20-30 Fire Support in Corps and Divisions
FM 6-20-40 Fire Support for Brigade Operations (Hvy)
FM 44-31 Tactics, Techniques, and Procedures: Avenger Squad Operations
FM 44-46 Manpads Platoon and Section Operations
FM 71-3 Armor and Mechanized Infantry Brigade
FM 71-100 Division Operations
FM 100-5 Operations
FM 100-26 Air Ground Operations System
FM 100-103 Army Airspace Command and Control in a Combat Zone

**TACP (TACTICAL AIR CONTROL PARTY)
BRIGADE**

PLANNING

- G1. Conduct mission analysis** MCM 3-3, Vol VIII
- a. Determine specified tasks
 - b. Determine implied tasks
 - c. Determine area of operations (sector/zone)
 - d. Determine available time
- G2. Determine the commander's intent** MCM 3-3, Vol VIII
Understand the purpose of the mission
- G3. Coordinate with S2** MCM 3-3, Vol VIII
- a. Identify all available information and intelligence on the following:
 - 1) Enemy forces
 - 2) Terrain
 - 3) Weather
 - b. Ensure continuous flow of new intelligence to the Air Liaison Officer
 - c. Ensure continuous flow of combat information from aircraft to the S2
 - d. Determine what air intelligence assets are available
- G4. Analyze the terrain** MCM 3-3, Vol VIII
- a. Determine ground avenues of approach
 - 1) Choke points
 - 2) Obstacles
 - b. Identify air avenues of approach
 - c. Determine the impact of weather on air operations
 - d. Identify physical control features
 - e. Determine the impact of the sun angle on air operations
 - f. Determine the elevation of targets in feet
- G5. Identify air control measures** MCM 3-3, Vol VIII; ATP 40; FM 100-103
- a. Confirm coordinating altitude (from above ground level (AGL))
 - b. Determine restrictions and constraints
 - c. Identify the following areas:
 - 1) High density airspace control zond (HIDACZ)
 - 2) Restricted Operations Zones (ROZ)
 - 3) Air ingress/egress routes
 - 4) Airspace Coordination Areas (ACA)
 - 5) Contact Points/Initial Points (CP/IP)
 - 6) Helicopter air corridors
 - 7) Minimum Risk Routes (MRR)
 - 8) Engagement Areas

- G6. Analyze the enemy situation** **MCM 3-3, Vol VIII**
The following enemy information is determined:
- 1) Size
 - 2) Disposition
 - 3) Location
 - 4) Organization
 - 5) Potential courses of action
- G7. Analyze friendly situation** **MCM 3-3, Vol VIII**
The following information is identified:
- 1) FLOT (Forward Line of Troops)
 - 2) Location of forward elements
 - 3) Location of indirect fire assets
 - 4) Helicopter areas of operation (AO)
 - a) Routes
 - b) Lift
 - c) Attack
 - 5) UAV (Unmanned Air Vehicle) AO
 - 6) Location of the FSCL (Fire Support Coordination Line)
- G8. Determine communication requirements** **MCM 3-3, Vol VIII; TAC Pam 50-20**
- a. Identify locations which provide continuous communications with ground and air forces.
 - b. Determine communications requirements with the following:
 - 1) Ground forces
 - 2) Air forces
 - 3) Army aviation
 - c. Identify ground retransmission requirements
 - d. Develop air communication plan
 - 1) HAVE-Quick
 - 2) TOD
 - 3) Mickey
 - 4) Chattermark
- GA9. Coordinate Air Defense Artillery control procedures** **TAC Pam 50-20**
- a. Identify Air Defense Artillery (ADA) activation procedures
 - b. Identify ADA change of status procedures
 - c. Identify air ingress/egress routes
 - e. Identify notification procedures for friendly air on station
- G10. Coordinate with Army Aviation** **TAC Pam 50-20; FM 1-111**
- a. Identify responsibilities
 - b. Identify constraints/limitations
 - 1) Altitude
 - 2) Routes
 - c. Determine capabilities
 - d. Identify engagement areas

- e. Identify critical locations
 - 1) Landing zones
 - 2) Forward Arming and Refueling Points (FARP)
 - 3) Battle Positions
 - 4) Observation positions (AOPs)
- f. Identify Joint Air Attack Team (JAAT) specific considerations

G11. Determine enemy ADA threat

MCM 3-3, Vol VIII; TACP Pam 50-20

The following enemy information is identified:

- 1) Type
- 2) Location
- 3) Capabilities
- 4) Expected actions
 - a) Movement
 - b) Stationary

G12. Review air capabilities and priorities

TAC Pam 50-20; FM 6-20

- a. Brief ground commander on air limitations
- b. Brief ground commander on air capabilities
- c. Reaffirm commander's intent
- d. Nominate appropriate targets
- e. Target priorities conform to the following criteria:
 - 1) Aircraft survival
 - 2) Support ground maneuver plan
- f. Target priorities conform with the ground fire support plan

G13. Analyze fire support plan

MCM 3-3, Vol VIII; FM 6-20

- a. The following information is identified:
 - 1) Location of indirect fire assets
 - a) Artillery guns
 - b) Multiple Launched Rocket Systems
 - c) Mortars
 - 2) Gun-target lines
 - 3) Movement sequence
 - a) Timing
 - b) New locations
 - 4) Planned targets
 - 5) Sequence of engagement
 - 6) Maximum ballistic altitudes
 - 7) ACAs
 - 8) JAAT considerations
- b. Recommend appropriate target sequence

G14. Plan JSEAD (Joint Suppression of Enemy Air Defenses)

TAC Pam 50-20

- a. Determine ADA targets
- b. Determine ADA target locations
- c. Determine type of suppression

- d. Determine type of JSEAD available
- e. Integrate JSEAD with adjacent units

G15. Determine risk to Airborn Forward Air Controller MCM 3-3, Vol VIII

- a. Determine risk to Airborn Forward Air Controller (AFAC) during the following:
 - 1) Target observation
 - 2) Target marking
 - 3) Holding pattern
- b. Identify AFAC position in relation to the following:
 - 1) Enemy threat
 - a) Distance
 - b) Capabilities
 - c) ADA
 - 2) Friendly
 - a) ADA
 - b) Gun target lines
 - c) Air routes
- c. Confirm appropriateness of the following:
 - 1) Altitude
 - 2) Holding pattern area

G16. Analyze targets TAC PAM 50-20;FM 6-20

- a. Identify locations
- b. Determine target type
- c. Determine the best method to defeat enemy targets
 - 1) Identify appropriate JSEAD requirements
 - 2) Identify necessary suppression measures
- d. Determine the impact of weather on air operations
- e. Confirm engagement criteria

G17. Determine ground priority targets MCM 3-3, Vol VIII

- a. Identify target type
- b. Integrate target with threat to friendly forces
 - 1) Determine risk to air assets
 - 2) Determine risk of fratricide

G18. Identify Initial Point MCM 3-3, Vol VIII

- a. Identify location
 - 1) Appropriate distance from threat
 - 2) Easy to identify
- b. Determine holding altitude
- c. Confirm deconfliction of IP from gun target lines
- d. Confirm communication capabilities

- G19. Analyze ground scheme of maneuver** MCM 3-3, Vol VIII; TAC Pam 50-22
The following information is identified:
- 1) FLOT
 - a) Battle positions
 - b) Location of elements forward of the FLOT
 - 2) Engagement areas
 - 3) Maneuver restrictions
 - a) Boundaries
 - b) Axis of advance
 - c) Limitations
 - 4) Control measures
- G20. Continuously Analyze Intelligence Developments** TACM 3-1 VI
Integrate combat information from all sources
- 1) JSTAR
 - 2) U2
 - 3) Reconnaissance
 - 4) Ground assets
 - 5) Other available assets
- G21. Initiate Close Air Support (CAS) request** FM 90-21
- a. Supports ground scheme of maneuver
 - b. Supports fire support plan
 - c. Conforms to intelligence estimate
- G22. Determine what air is planned** MCM 3-3, Vol VIII
The following information is determined:
- 1) Type of aircraft
 - 2) When the aircraft will arrive
 - 3) How long aircraft will remain on station
 - 4) Aircraft capabilities
 - a) Munitions
 - b) Electronic Warfare (EW)
 - 5) Projected sortie allocation
- G23. Determine what air is available** MCM 3-3, Vol VIII
The following information is identified:
- 1) Type of aircraft
 - 2) When the aircraft will be available
 - 3) How long aircraft will be available
 - 4) Aircraft capabilities
 - a) Munitions
 - b) EW
 - 5) Air priority of effort in the AO
 - 6) Projected tanker support
 - 7) Projected Airborne Warning and Control System (AWACS)
 - 8) Projected fighter coverage

- 9) Projected suppression coverage
 - a) JSEAD
 - b) Weasel
- G24. **Determine target identification procedures** TAC Pam 50-28; FM 6-20
 - a. Determine target marking procedures
 - b. Determine the utility of using the following target marking methods
 - 1) Laser
 - 2) Smoke
 - 3) Tracers
 - 4) Description
 - b. Identify easy to locate terrain features
- G25. **Develop contingency plans** TACM 3-1 VI, FM 6-20
 - a. Identify secondary targets
 - b. Identify alternate engagement areas
 - c. Prepare for second echelon engagement
- G26. **Organize for combat** MCM 3-3, Vol VIII
 - a. Establish chain of command
 - b. Identify locations for TACP elements
 - 1) Provide for observation of target area
 - a) AFAC
 - b) GFAC
 - c) Flight lead control
 - 2) Locations provide uninterrupted communication with air and ground forces
 - c. Determine position of Air Liaison Officer within the command group
 - d. Identify CAS final control authority
- G27. **Designate subordinate responsibilities** MCM 3-3, Vol VIII
 - a. Confirm responsibilities for battalion TACPs
 - b. Confirm required actions of the Brigade TACP
 - c. Ensure any special instructions are disseminated to all subordinate elements
 - d. Confirm that all subordinates are capable of fulfilling their assigned responsibilities

PREPARATION

- G28. Confirm aircraft allocation** MCM 3-3, Vol VIII; TACM 55-46
The following information is confirmed:
- 1) Type of aircraft
 - 2) When the aircraft will arrive
 - 3) Munitions
 - 4) Number of sorties
- G29. Confirm CAS integration with Brigade Synch Matrix** FM 6-20
- a. CAS plan conforms with Decision Support Template
 - b. CAS is synchronized with scheme of maneuver
 - 1) Timing
 - 2) Command or event driven sequence
 - c. CAS is synchronized with fire support plan
 - 1) Timing
 - 2) Command or event driven sequence
 - 3) Targets
 - d. CAS is synchronized with Army Aviation
 - 1) Timing
 - 2) Battle positions
 - 3) Engagement areas
 - e. Plan for continuous CAS missions
- G30. Confirm plan with Fire Support Element** FM 6-20
- a. Confirm that CAS plan is synchronized with indirect fire plan
 - 1) Sequence of attack
 - 2) Timing
 - 3) Engagement areas
 - 4) Targets
 - b. Ensure that masking of indirect fires is minimized
 - c. Review CAS target list for appropriateness
 - d. Identify coordination considerations with Army Aviation
- G31. Confirm airspace control measures** MCM 3-3, Vol VIII; TACR 55-46
- a. Identify any changes to initial plan
 - b. Identify local airspace restrictions for the following:
 - 1) Areas
 - 2) Altitude
 - 3) Time
- G32. Confirm communications** MCM 3-3, Vol VIII; TAC Pam 50-20
Confirm communications capability with the following:
- 1) TACP
 - a) HAVE-Quick
 - b) Authentication

- 2) Air forces
- 3) Army aviation
 - a) Authentication

G33. Deconflict airspace

TAC Pam 50-28; FM 100-103

- a. Plan minimizes potential fratricide situations
- b. Plan minimizes the masking of fires for all elements
- c. Plan reaction to aircraft ingressing and egressing the AO
- d. Confirm that all the following assets are operating in concert:
 - 1) CAS
 - 2) Helicopters
 - a) Attack
 - b) Lift
 - c) Scout
 - 3) Indirect fires
 - a) Artillery
 - b) Mortars
 - c) Naval
 - 4) ADA
 - 5) UAV

G34. Brief AFAC on threat

MCM 3-3, Vol VIII

- a. Enemy forces
 - 1) Location
 - 2) Disposition
 - 3) ADA
- b. Weather

AFAC (AIR FORWARD AIR CONTROLLER)

PLAN **(Pre-flight)**

- A1. Analyze the tactical situation** MCM 3-3, Vol VIII
- a. Determine ground forces mission
 - 1) Offensive
 - 2) Defensive
 - b. Determine purpose/intent of ground mission
 - c. Determine air forces mission
- A2. Determine the friendly situation** MCM 3-3, Vol VIII
- The following information is identified:
- 1) FLOT (Forward Line of Troops)
 - 2) Location of forward elements
 - 3) Location of indirect fire assets
 - 4) Helicopter areas of operation
 - 5) UAV (Unmanned Air Vehicle) areas of operation
 - 6) Location of FSCL (Fire Support Coordination Line)
- A3. Analyze the enemy situation** MCM 3-3, Vol VIII
- The following enemy information is determined:
- 1) Size
 - 2) Disposition
 - 3) Location
 - 4) Organization
 - 5) Potential courses of action
- A4. Determine enemy ADA threat** MCM 3-3, Vol VIII; TACP Pam 50-20
- The following enemy information is identified:
- 1) Type
 - 2) Location
 - 3) Capabilities
 - 4) Expected actions
 - a) Movement
 - b) Stationary
- A5. Determine the EW threat** MCM 3-3, Vol VIII
- a. Determine potential impact of friendly EW
 - b. Determine scope of enemy EW
 - c. Determine how to neutralize enemy EW
 - d. Identify measures to overcome enemy jamming
- A6. Analyze the terrain** MCM 3-3, Vol VIII
- a. Determine ground avenues of approach

- 1) Choke points
- 2) Obstacles
- b. Identify air avenues of approach
- c. Determine the impact of weather on air operations
- d. Identify physical control features
- e. Determine the impact of the sun angle on air operations
- f. Determine the elevation of targets in feet

A7. Determine what air is planned

MCM 3-3, Vol VIII

The following information is determined:

- 1) Type of aircraft
- 2) When the aircraft will arrive
- 3) How long aircraft will remain on station
- 4) Aircraft capabilities
 - a) munitions
 - b) EW
- 5) Projected sortie allocation
- 6) Projected tanker support
- 7) Projected AWACS
- 8) Projected fighter coverage
- 9) Projected suppression coverage
 - a) JSEAD
 - b) Weasel

A8. Determine what air is available

MCM 3-3, Vol VIII

The following information is identified:

- 1) Type of aircraft
- 2) When the aircraft will be available
- 3) How long aircraft will be available
- 4) Aircraft capabilities
 - a) munitions
 - b) EW
- 5) Priority of effort in the area of operations

A9. Identify air control measures

MCM 3-3, Vol VIII

- a. Confirm coordinating altitude (from AGL)
- b. Determine restrictions and constraints
- c. Identify the following areas
 - 1) HIDACZ
 - 2) Restricted Operations Zones (ROZ)
 - 3) Air ingress/egress routes
 - 4) ACAs
 - 5) Contact Points/Initial Points
 - 6) Helicopter air corridors
 - 7) Minimum Risk Routes (MRR)
 - 8) Engagement areas

- A10. Understand coordinating measures** **MCM 3-3, Vol VIII**
- a. Confirm refueling capability
 - b. Identify the location of holding areas
 - c. Determine available on station time
 - f. Confirm engagement constraints
- A11. Determine air tactics to be used** **MCM 3-3, Vol VIII**
- a. Tactics are appropriate to threat
 - 1) High threat-low altitude
 - 2) Low threat-high altitude
 - b. Tactics are appropriate to mission
 - c. Tactics are appropriate to terrain and weather
- A12. Coordinate with airspace management agencies** **MCM 3-3, Vol VIII;**
- a. Confirm assigned area of operations
 - b. Determine EW situation
 - c. Confirm radar monitoring capability
 - d. Confirm ADA situation
 - 1) Enemy
 - 2) Friendly
 - e. Determine echelon specific restrictions
 - f. Coordinate with ASOC (or ABCCC as alternate)
- A13. Recieve Intelligence update TACM 3-1 V8**
- a. Update given prior to arrival in area of operations
 - b. Update includes latest information on area of operations

PREPARE
(On Station)

- A14. **Confirm communications** MCM 3-3, Vol VIII
Communications are established with the following:
- 1) TACP
 - a) HAVE-Quick
 - b) Authentication
 - 2) Air forces
 - 3) Army Aviation
 - a) Authentication
- A15. **Coordinate with TACP** TAC Pam 50-22; TAC Pam 50-20
- a. Recieve update from TACP
 - 1) Latest CAS information
 - 2) Latest tactical intelligence
 - 3) Ground tactical situation
 - 4) Location of TACP
 - 5) Confirm friendly ADA status
 - 6) Update on current enemy ADA threat
 - b. Update TACP on air observations
- A16 **Analyze Threat Situation** MCM 3-3, Vol VIII
- a. Determine the best method to defeat targets
 - b. Determine the impact of weather on air operations
 - c. Determine methods to suppress enemy ADA
- A17. **Determine ground scheme of maneuver** TAC Pam 50-22
- a. Identify FLOT (Forward Line of Troops)
 - b. Identify engagement areas
 - c. Identify maneuver restrictions
 - 1) Axis of advance
 - 2) Boundaries
 - 3) Limitations
 - d. Identify location of elements forward of the FLOT
- A18. **Analyze targets** MCM 3-3, Vol VIII
- a. Identify location
 - b. Determine target type
 - c. Confirm engagement criteria
 - d. Identify final control authority for each target
 - e. Determine target elevation (in feet)
- A19. **Establish CAS target priorities** FM 6-20
- a. Target priorities conform to the following criteria:
 - 1) support ground maneuver plan

- 2) aircraft survival
 - b. Target priorities conform with the ground fire support plan
- A20 Confirm JSEAD plan** MCM 3-3, Vol VIII
- a. Verify JSEAD requirements
 - b. Verify planned suppression measures
- A21. Recieve Army Aviation update** TAC Pam 50-22
- a. Identify responsibilities
 - b. Identify constraints/limitations
 - 1) Altitude
 - 2) Routes
 - c. Confirm capabilities
 - d. Confirm engagement areas
 - e. Identify critical locations
 - 1) Landing zones
 - 2) FARPs (Forward Arming and Refueling Points)
 - f. Determine method of authentication between helicopters and CAS
- A22. Confirm aircraft allocation** MCM 3-3, Vol VIII; TACM 55-46
- The following information is confirmed:
- 1) Type of aircraft
 - 2) when the aircraft will arrive
 - 3) munitions
 - 4) number of sorties
- A23. Deconflict airspace** TAC Pam 50-28, FM 100-103
- a. Plan minimizes potential fratricide situations
 - b. Plan minimizes the masking of fires for all elements
 - c. Plan reaction to aircraft ingressing and egressing the AO
 - d. Confirm that all the following assets are operating in concert:
 - 1) CAS
 - 2) helicopters
 - a) attack
 - b) lift
 - c) scout
 - 3) Indirect fires
 - a) artillery
 - b) mortars
 - c) naval
 - 4) ADA
 - 5) Unmanned air vehicles (UAV)
- A24. Confirm airspace control measures** MCM 3-3, Vol VIII; TACR 55-46
- a. Identify any changes to initial plan
 - b. Identify local airspace restrictions for the following:
 - 1) areas

- 2) altitude
- 3) time

A25. Confirm friendly ADA status

MCM 3-3, Vol VIII, FM 100-103

- a. Verify current ADA status
- b. Verify procedures to change ADA status

A26. Match weapon with target

MCM 3-3, Vol VIII

- a. Ensure that planned targets are matched with the most appropriate weapon system
- b. Confirm that munitions support scheme of maneuver
- c. Sequence attack to conform to established target priorities
- d. Sequence attack to conform to fire support plan

A27. Confirm target marking procedures

TAC Pam 50-28

- a. Verify marking procedures
- b. Confirm the utility of using the following target marking methods
 - 1) laser
 - 2) smoke
 - 3) tracers
 - 4) description
- c. Verify terrain features for ease of identification

EXECUTION
(Cyclic)

- GA35. Establish communications with CAS** TAC Pams 50-28 & 50-20
- a. Confirm communications with incoming CAS
 - 1) Establish communications with fighters
 - a) Authentication
 - b) Activate Chattermach (alt freq) plan
 - b. Continuous communications are maintained for the following:
 - 1) CAS and FAC
 - 2) FAC and TACP
 - 3) TACP and command group
 - c. Army Aviation maintains communication with the following:
 - 1) Command group
 - 2) TACP
 - 3) FAC (if JAAT)
- GA36 Confirm Fighter line-up** TAC Pam 50-22
- a. Call sign
 - b. Mission number
 - c. Ordnance and fusing
 - d. On station time (playtime)
 - e. Abort code
- GA37 Deconflict airspace** TAC Pam 50-28
- a. Shift or lift indirect fires
 - b. Shift other air assets
 - 1) Helicopters
 - 2) UAVs
 - c. Update ADA status
 - d. Establish CAS holding points
 - e. Prepare to stack fighters
- GA38 React to delay of aircraft** TAC Pam 50-28
- a. Confirm new time
 - b. Determine changes in ground situation
 - c. Confirm targets
 - d. Develop new targets
 - e. Activate contingency plans
- GA39 Announce arrival of friendly air** MCM 3-3, Vol VIII
- a. AFAC Notify TACP
 - b. TACP notify command group
- GA40 Identify target priorities to pilots** TAC Pam 50-22
- a. Ensures that pilots understand target priorities

- b. Ensures that pilots understand CAS attack sequence

GA41 Control CAS during Army Aviation missions

TAC Pam 50-20

- a. confirm call signs for all aircraft
- b. Confirm JFire/JAAT targets
- c. Confirm target locations for:
 - 1) CAS
 - 2) Army Aviation
 - 3) Indirect fires
- d. Confirm target marking procedures

GA42 Brief JFIRE (9 Line) to aircraft at IP/CP

MCM 3-3, Vol VIII

- a. Briefing follows prescribed format
- b. CAS aircraft have current information on the following:
 - 1) Targets
 - 2) Friendly situation
 - 3) Hazards
 - a) ADA
 - b) enemy
 - c) indirect fires

GA43 Confirm friendly locations with aircraft

TAC Pam 50-22, MCM 3-3, Vol VIII

- a. Pilots can identify FLOT
- b. Pilots can identify location of elements forward of the FLOT
- c. Pilots are aware of other aircraft in the area
- d. Pilots understand the danger close (1000 meters) criteria

GA44 Confirm target locations with aircraft

TAC Pam 50-22, MCM 3-3, Vol VIII

- a. Ensure that CAS aircraft can identify the targets
- b. Designate targets:
 - 1) by grid
 - 2) from known terrain feature
 - 3) by marking designator

GA45 Initiate JSEAD effort

- a. Execute prior to CAS attack
- b. Confirm targets
- c. Confirm method of attack
 - 1) CAS
 - 2) Army Aviation
 - 3) Indirect fires
- d. Confirm effectiveness of attack

GA46 Confirm attack approval from ground commander

TAC Pam 50-28

Ensure ground commander is aware of the following:

- 1) Target type
- 2) Target location

- 3) Time of attack
- 4) Munitions

GA47 Issue attack clearance

- a. Identify final authority
- b. Confirm abort code
- c. Confirm type of clearance
 - 1) Depart IP
 - 2) On Final
 - 3) Flight Lead Control

GA48 Confirm target approach

MCM 3-3, Vol VIII

Ensure that the following are confirmed by both air and ground forces:

- 1) Air corridor
- 2) Attack altitude
- 3) Attack timing

GA49 Direct attack on targets

TAC Pam 50-28

- a. Execute JSEAD
- b. Direct CAS to targets
- c. Identify targets for aircraft
 - 1) Smoke
 - 2) Laser
 - 3) Geographic

GA50 Continuously update aircraft

TAC Pams 50-28 & 50-20

- a. Anticipate ground maneuver speed
- b. Continuously give aircraft known and probable locations of enemy forces
- c. Continuously give aircraft locations of friendly forces
- d. Continuously update aircraft on the ground tactical situation

GA51 Request pilot observations

MCM 3-3, Vol VIII

- a. Determine size of enemy forces
- b. Determine enemy disposition
- c. Determine type of enemy force
- d. Identify movement

GA52 Disseminate pilot observations

MCM 3-3, Vol VIII

All pilot tactical observations are immediately passed to the following:

- 1) The S-2
- 2) The S-3
- 3) The commander
- 4) Other aircraft

GA53 Determine BDA

TAC Pam 50-22, MCM 3-3, Vol VIII

- a. Identify friendly aircraft losses
- b. Identify enemy losses

- 1) Personnel
- 2) Equipment
- 3) Location

GA54 Execute FAC handoff

TAC Pams 50-28 & 50-22, MCM 3-3, Vol VIII

- a. Designate FAC responsibilities (in cases of multiple FACs)
- b. Update incoming FAC on situation
- c. Ensure continuous and unimpeded CAS support
- d. GFAC prepared to assume direct control of aircraft

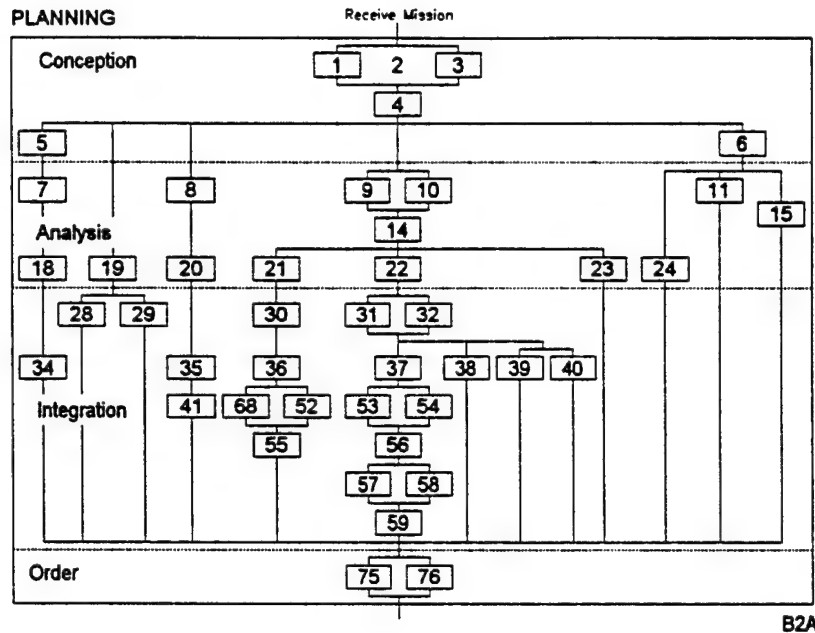
APPENDIX C

Battle Flow Framework for Defend and Attack Mission (Ground Maneuver Forces)

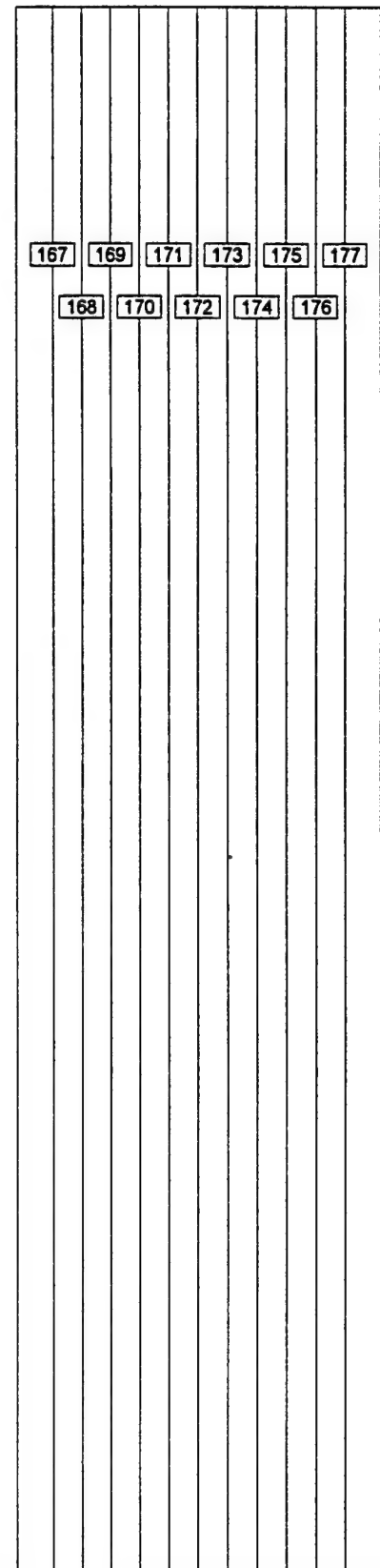
Appendix C shows the critical battle tasks for ground maneuver forces in a plan, prepare, and execute structure similar to that used in Appendix A. Both defend and attack missions are illustrated. Further discussion of this presentation, with doctrinal references for the tasks may be found in the Combined Arms Battle Task Mission Books (CALL, to be published in July 1994).

BATTLE FLOW FRAMEWORK DEFEND MISSION

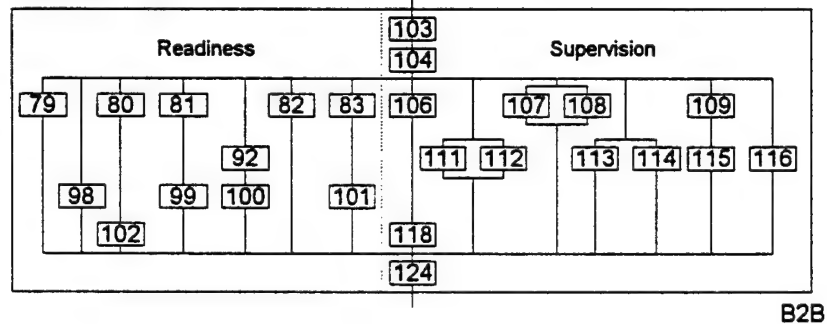
PLANNING



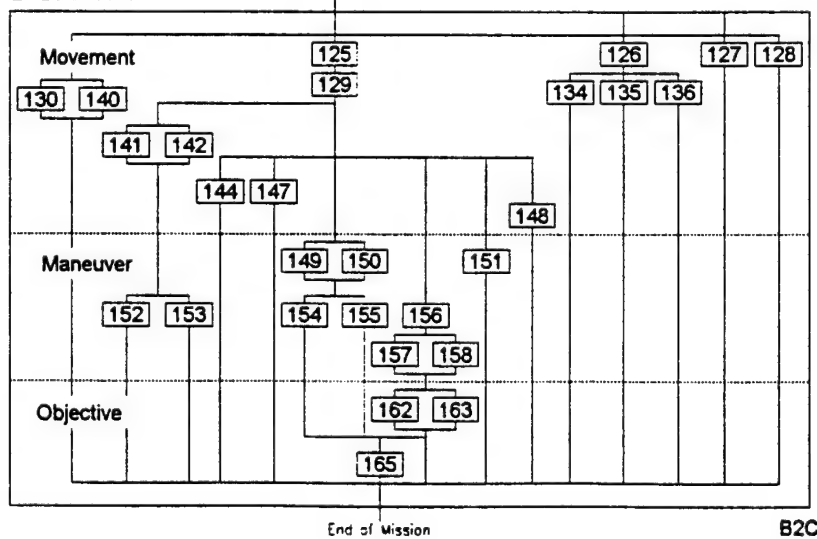
COMMON



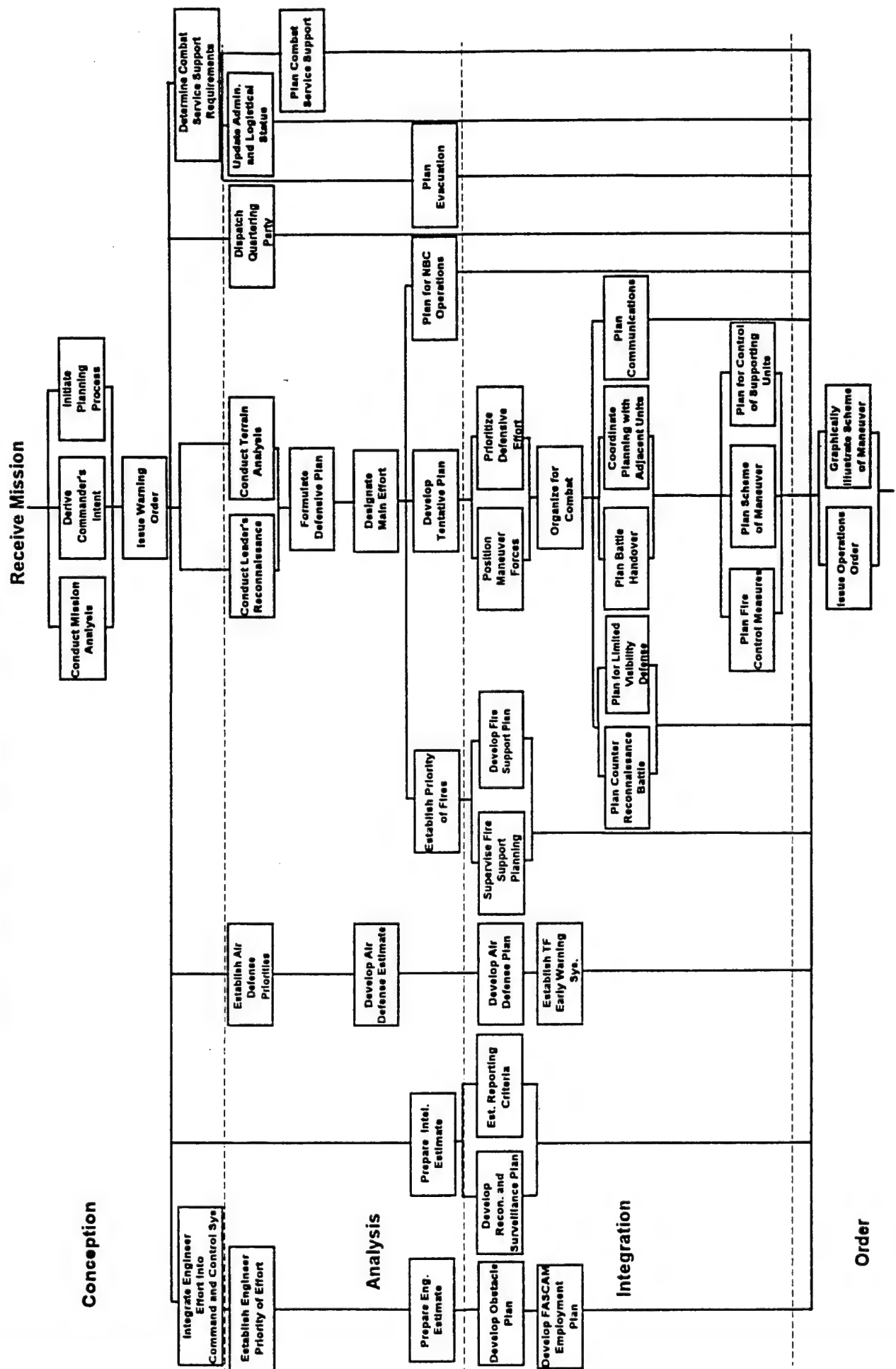
PREPARATION



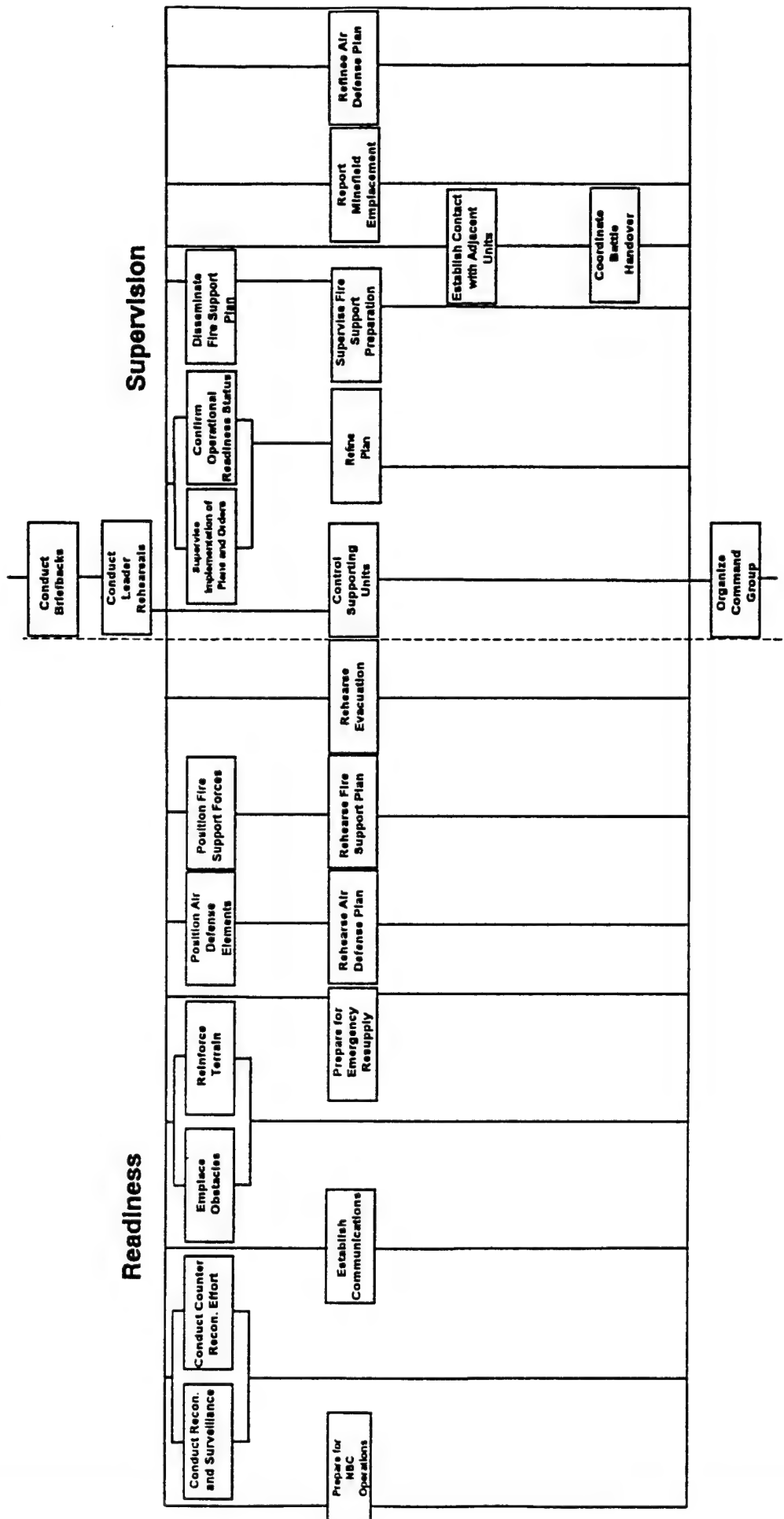
EXECUTION



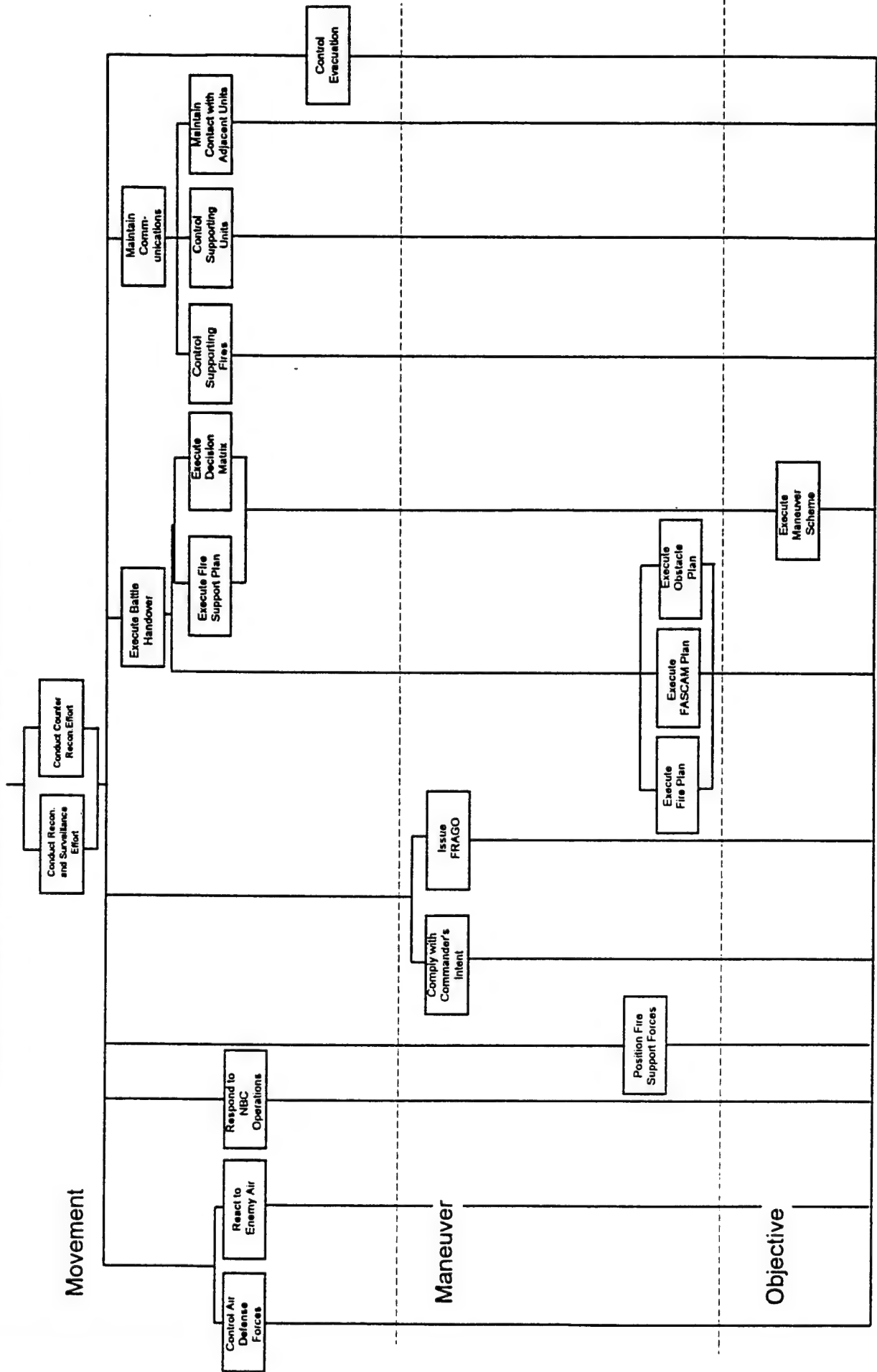
DEFEND: PLANNING PHASE TASKS



DEFEND: PREPARATION PHASE TASKS



DEFEND: EXECUTION PHASE TASKS



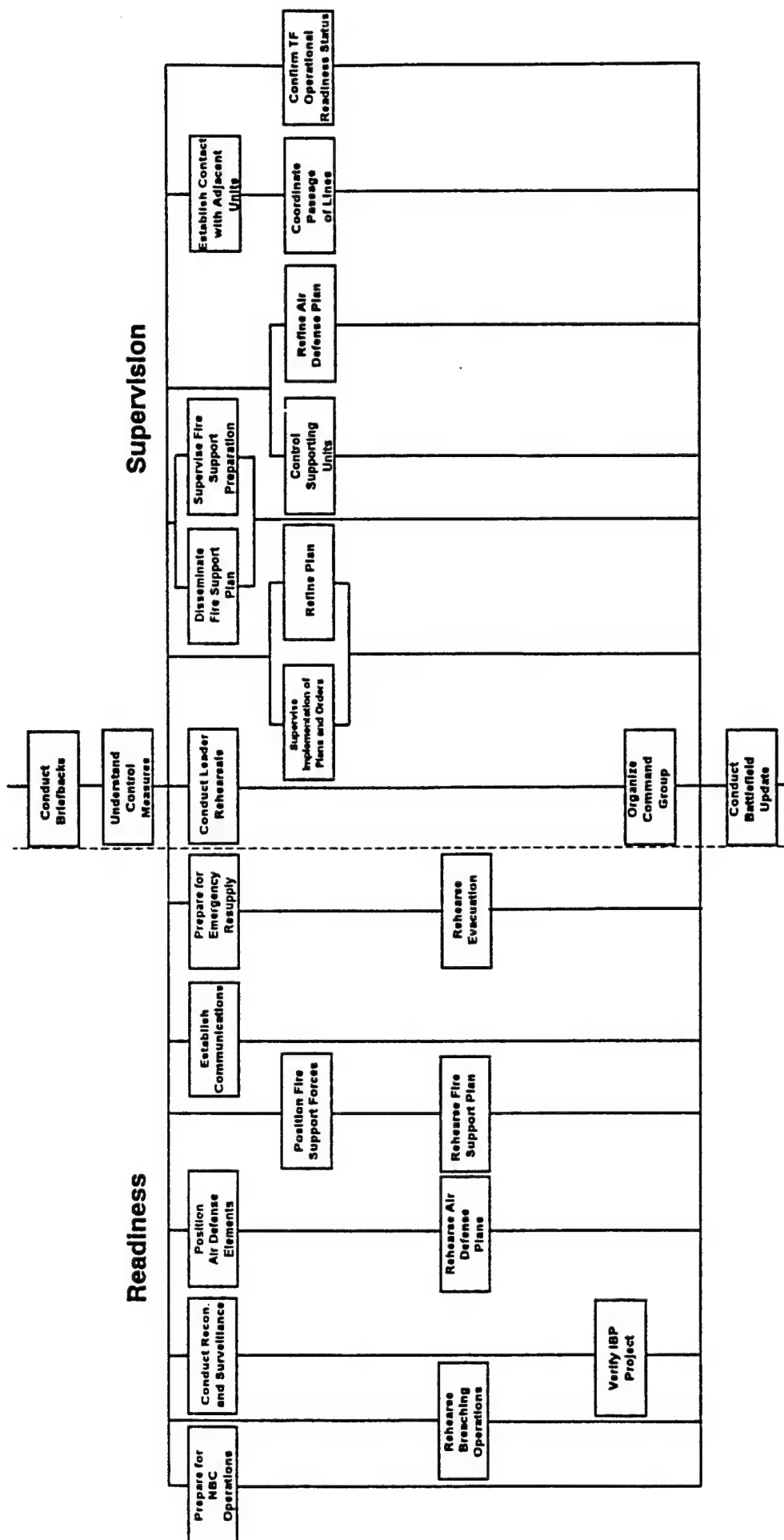
End of Mission

DEFEND: COMMON PHASE TASKS

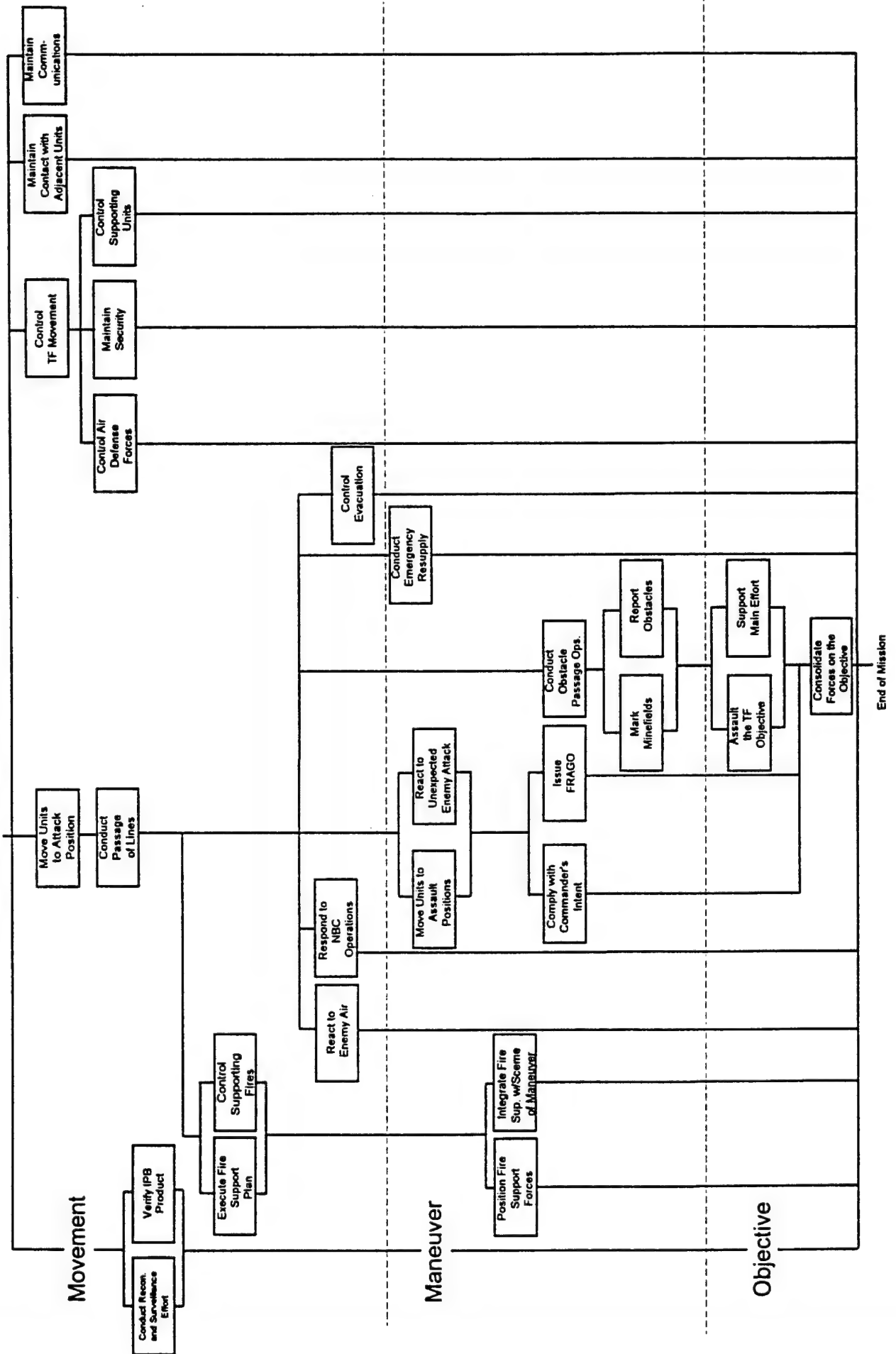
Conduct IBP Process	Direct Intelligence Collection Effort	Report Combat Information	Update Estimate of the Situation	Operate Admin/Log Operations Center	Utilize Combat Service Support Assets
Analyze Combat Info.	Disseminate Intelligence and Combat Info.	Maintain Operations Security	Operate Tactical Operations Center	Execute Combat Service Support Operations	

[illegible]

PREPARATION PHASE TASK



EXECUTION PHASE TASK



COMMON PHASE TASKS

Conduct IBP Process	Direct Intelligence Collection Effort	Report Combat Information	Update Estimate of the Situation	Operate Admin/Log Operations Center	Utilize Combat Service Support Assets
Analyze Combat Info.	Disseminate Intelligence and Combat Info.	Maintain Operations Security	Operate Tactical Operations Center	Execute Combat Service Support Operations	

APPENDIX D

Matrices Linking TACP and Ground Maneuver Tasks

Two sets of matrices are presented in Appendix D: One set for a deliberate attack and one for a defense. Each set has three matrices - one for each planning, preparation, and execution phase. Each matrix shows the tasks portrayed by the ground maneuver unit as rows and the tasks performed by the TACP as columns. The circles in the intersections represent links between the two sets of tasks. For example, ground maneuver unit task 19 (deliberate attack - planning) *Prepare Intelligence Estimate* is linked to TACP task G3 *Coordinate with S2*. The UPMS battle task lists are the most comprehensive lists of tasks performed by ground maneuver units. Even so, they do not provide sufficient focus on the tasks required to integrate and synchronize the combat power of close air support. The broad scope of some UPMS tasks such as task 141 *Execute Fire Support Plan* (deliberate attack - execution) helps illustrate why it was necessary to develop a more detailed list of ground maneuver tasks.

Ground Maneuver-Tactical Air Control Party Task Interactive Matrix [Deliberate Attack-Planning]

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	G17	G18	G19	G20	G21	G22	G23	G24	G25	G26	G27
1 Conduct Mission Analysis																											
2 Derive Commanders Intent																											
3 Initiate Planning Process																											
4 Issue Warning Order																											
5 Integrate Eng Effort into C2 System																											
6 Determine CSS Requirements																											
7 Conduct Mobility Analysis																											
8 Establish Air Defense Priorities																											
9 Conduct Leaders Recon																											
10 Conduct Terrain Analysis																											
11 Update Admin and Log Status																											
14 Designate Main Effort																											
15 Plan CSS																											
18 Prepare Engineer Estimate																											
19 Prepare Intelligence Estimate																											
20 Develop Air Defense Estimate																											
21 Establish Priority of Fires																											
22 Develop Tentative Plan																											
23 Plan for NBC Operations																											
24 Plan Evacuation																											
28 Develop Recon and Surveillance Plan																											
29 Establish Reporting Criteria																											
30 Supervise Fire Support Planning																											
31 Organize for Combat																											
32 Coord. Plans with Adjacent Units																											
34 Develop Mobility Plan																											
35 Develop Air Defense Plan																											
36 Develop Fire Support Plan																											
37 Plan Consolidation																											
38 Plan Maneuver Control Measures																											
39 Plan for Control of Supporting Units																											
40 Plan Communications																											
41 Establish TF Early Warning System																											
52 Plan Fire Control Measures																											
53 Plan Assault Phase																											
54 Plan Supporting Attack																											
55 Plan Screening Fires																											
56 Plan Actions on Contact																											
57 Plan Movement Security																											
58 Plan Move. Formations and Techniques																											
59 Plan Passage of Lines																											
68 Integrate FS with Scheme of Maneuver																											
75 Issue Operations Order																											
76 Graphically Illus. Scheme of Maneuver																											

Ground Maneuver-Tactical Air Control Party Task Interactive Matrix **[Deliberate Attack-Preparation]**

		GA28	Confirm Aircraft Allocation	G29	Confirm CAS Integration with Brigade Synchron Matrix	G30	Confirm Plan with FSE	GA31	Confirm Airspace Control Measure	GA32	Confirm Commo	GA33	Deconflict Airspace Utilization	G34	TACP Briefs AFAC on Threat
79	Prepare for NBC Operations														
80	Conduct Recon & Surveillance														
81	Position Air Defense Elements			●	●	●						●			
82	Establish Commo										●				
83	Prepare for Emergency Resupply														
92	Position Fire Support Forces			●	●	●						●			
98	Rehearse Breaching Operations														
99	Rehearse Air Defense Plans			●				●				●			
100	Rehearse Fire Support Plan			●	●	●						●			
101	Rehearse Evacuation														
102	Verify IBP Product														
103	Conduct Briefbacks			●	●	●									
104	Understand Control Measures														
106	Conduct Leader Rehearsals			●	●	●									
107	Disseminate Fire Support Plan			●				●				●			
108	Supervise Fire Support Preparation			●	●	●						●			
109	Establish Contact With Adjacent Units							●				●			
111	Supervise Implementation of Plans & Orders											●			
112	Refine Plan			●								●			
113	Control Supporting Units														
114	Refine Air Defense Plan							●				●			
115	Coordinate Passage of Lines														
116	Confirm Task Force OR Status														
118	Organize Command Group														
124	Conduct Battlefield Update													●	

Ground Maneuver-Tactical Air Control Party Task Interactive Matrix [Deliberate Attack-Execution]

	GA35 Establish Commo with CAS	GA36 Confirm Fighter Line-up	GA37 Deconflict Airspace	GA38 React to Delay of Aircraft	GA39 Announce Arrival of CAS	GA40 ID Target Priorities to Pilots	GA41 Control CAS During Army Aviation Missions	GA42 Brief JFIRE to CAS at IP	GA43 Confirm Friendly Locations with Aircraft	GA44 Confirm Target Locations with Aircraft	GA45 Initiate JSEAD Effort	GA46 Confirm Attack Clearance from Ground Commander	GA47 Issue Attack Clearance	GA48 Confirm Target Approach	GA49 Direct Attack on Targets	GA50 Continuously Update CAS	GA51 Request Pilot Observations	GA52 Disseminate Pilot Observations	GA53 Confirm BDA from Aircraft	GA54 Coordinate FAC Handoff
125 Move Units to Attack Position																				
126 Control TF Movement																				
127 Maintain Contact with Adj. Units			●			●		●												
128 Maintain Commo	●																			
129 Conduct Passage of Lines																				
130 Conduct R&S Effort																	●	●	●	
134 Control Air Defense Forces			●	●									●							
135 Maintain Security																				
136 Control Supporting Units																				
140 Verify IPB Product																				
141 Execute Fire Support Plan			●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●
142 Control Supporting Fires			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
144 React to Enemy Air			●																	
147 Respond to NBC Operations																				
148 Control Evacuation																				
149 Move Units to Assault Positions																				
150 React to Enemy Contact						●			●											
151 Conduct Emergency Resupply																				
152 Position Fire Support Forces			●			●	●	●	●	●		●		●						
153 Integrate FS with Scheme of Man.						●	●	●	●	●		●								
154 Comply with CDRs Intent															●					
155 Issue Frago			●	●												●				
156 Conduct Obstacle Passage Opns.																				
157 Mark Minefields																				
158 Report Obstacles																				
162 Assault the TF Objective																				
163 Support Main Effort						●									●					
165 Consolidate Forces on Objective																				

Ground Maneuver-Tactical Air Control Party Task Interactive Matrix [Defend-Planning]

	G1	G2	G3	G4	G5	G6	G7	G8	G9	GA10	GA11	GA12	G13	G14	G15	GA16	G17	GA18	G19	G20	G21	GA22	GA23	G24	G25	G26	G27
1 Conduct Mission Analysis																											
2 Derive Commanders Intent																											
3 Initiate Planning Process																											
4 Issue Warning Order																											
5 Integrate Eng Effort into C2 System																											
6 Determine CSS Requirements																											
8 Establish Air Defense Priorities																											
9 Conduct Leaders Recon																											
10 Conduct Terrain Analysis																											
11 Update Admin and Log Status																											
12 Dispatch Quartermaster Party																											
13 Establish Engineer Priority of Effort																											
15 Plan Combat Service Support																											
16 Formulate Defensive Plan																											
17 Designate Main Effort																											
19 Prepare Intelligence Estimate																											
20 Develop Air Defense Estimate																											
21 Establish Priority of Fires																											
22 Develop Tentative Plan																											
23 Plan for NBC Operations																											
24 Plan Evacuation																											
25 Prepare Engineer Estimate																											
29 Establish Reporting Criteria																											
31 Organize for Combat																											
42 Establish TF Early Warning System																											
43 Plan Commo																											
44 Develop Obstacle Plan																											
45 Develop R&S Plan																											
46 Develop Air Defense Plan																											
47 Develop Fire Support Plan																											
48 Supervise Fire Support Planning																											
49 Position Maneuver Forces																											
50 Prioritize the Defensive Effort																											
57 Plan FASCAM Employment Plan																											
61 Plan Counter Recon Battle																											
62 Plan for Limited Visibility Defense																											
63 Plan Battle Handover																											
64 Coordinate Planning with Adj Units																											
65 Plan Fire Control Measures																											
66 Plan Scheme of Maneuver																											
67 Plan for Control of Supporting Units																											
77 Issue Operations Order																											
78 Graphically Illus. Scheme of Maneuver																											

Ground Maneuver-Tactical Air Control Party Task Interactive Matrix **[Defend-Preparation]**

		GA28	Confirm Aircraft Allocation	G29	Confirm CAS Integration with Brigade Synchron Matrix	G30	Confirm Plan with FSE	GA31	Confirm Airspace Control Measure	GA32	Confirm Commo	GA33	Deconflict Airspace Utilization	G34	TACP Briefs AFAC on Threat
79	Prepare for NBC Operations														
80	Conduct Recon & Surveillance														
84	Establish Commo									●					
85	Emplace Obstacles														
86	Reinforce Terrain														
87	Position Air Defense Elements		●	●	●								●		
88	Prepare for Emergency Resupply														
89	Conduct Counter Recon Effort														
92	Position Fire Support Forces		●	●	●								●		
95	Rehearse Air Defense Plans		●	●	●								●		
96	Rehearse Fire Support Plan		●	●	●								●		
97	Rehearse Evacuation														
102	Verify IBP Product														
103	Conduct Briefbacks		●	●	●										
105	Conduct Leader Rehearsals		●	●	●										
107	Disseminate Fire Support Plan		●		●								●		
111	Supervise Implementation of Plans & Orders												●		
112	Refine Plan		●										●		
113	Control Supporting Units														
116	Confirm Task Force OR Status														
117	Establish Contact with Adj Units							●					●		
119	Coordinate Battle Handover														
120	Supervise Fire Support Preparation		●	●	●								●		
121	Report Minefield Emplacement														
122	Refine Air Defense Plan							●					●		
123	Organize Command Group														

Ground Maneuver-Tactical Air Control Party Task Interactive Matrix [Defend-Execution]

	GA35 Establish Commo with CAS	GA36 Confirm Fighter Line-up	GA37 Deconflict Airspace	GA38 React to Delay of Aircraft	GA39 Announce Arrival of CAS	GA40 ID Target Priorities to Pilots	GA41 Control CAS During Army Aviation Missions	GA42 Brief JFIRE to CAS at IP	GA43 Confirm Friendly Locations with Aircraft	GA44 Confirm Target Locations with Aircraft	GA45 Initiate JSEAD Effort	GA46 Confirm Attack Clearance from Ground Commander	GA47 Issue Attack Clearance	GA48 Confirm Target Approach	GA49 Direct Attack on Targets	GA50 Continuously Update CAS	GA51 Request Pilot Observations	GA52 Disseminate Pilot Observations	GA53 Confirm BDA from Aircraft	GA54 Coordinate FAC Handoff
127 Maintain Contact with Adj. Units			●				●		●											
128 Maintain Commo	●																			
130 Conduct R&S Effort																	●	●	●	
131 Conduct Counter Recon Effort																				
134 Control Air Defense Forces			●	●									●							
135 Maintain Security																				
136 Control Supporting Units																				
137 Execute Battle Handover																				
141 Execute Fire Support Plan			●	●	●	●			●	●	●	●	●	●		●	●	●	●	
142 Control Supporting Fires			●	●	●		●	●	●	●	●	●	●	●	●	●				
144 React to Enemy Air				●																
145 Respond to NBC Operations																				
148 Control Evacuation																				
152 Position Fire Support Forces			●				●		●		●			●						
154 Comply with CDRs Intent															●					
155 Issue Frago				●		●										●				
159 Execute Fire Plan			●			●	●		●			●		●						
160 Execute FASCAM Plan																				
161 Execute Obstacle Plan																				
166 Execute Maneuver Scheme						●	●		●	●		●			●		●			

APPENDIX E

Ground Maneuver Task List for Close Air Support

Appendix E lists the tasks performed by ground maneuver units to assure integration and synchronization of close air support with the conduct of the ground battle. This task list is a consolidation and revision of the task list presented in Appendix C. It is designed to reflect appropriate critical combat tasks unique to the planning, preparation, and maneuver of ground forces alone while focusing on those actions necessary for the effective coordination and application of CAS assets.

**GROUND MANEUVER TASK LIST
FOR
CLOSE AIR SUPPORT**

PLANNING

- M1. Conduct mission analysis (AMTP 71-3, Task 71-3-3001; FM 101-5)**
 - a. Determine specified tasks.
 - b. Determine implied tasks.
 - c. Determine area of operations (sector/zone).
 - d. Determine available time.
 - e. Identify specific Rules of Engagement (ROE) that apply to CAS/air operations.
- M2. Determine the commander's intent (AMTP 71-3, Task 71-3-9001; FM 101-5)**
 - a. Understand the purpose of the mission.
 - b. Understand commander's intent for CAS.
- M3. S2 prepares Intelligence Estimate (AMTP 71-3, Task 71-3-2001; FM 34-1)**
 - a. Perform IPB and identify all available information and intelligence on enemy forces, terrain, and weather.
 - b. Determine availability of air intelligence assets in addition to normal resources.
 - c. Request continuous flow of combat information from aircraft to S2.
 - d. Ensure continuous flow of new intelligence to the Air Liaison Officer.
 - e. Request G2 input on deep enemy ADA threat.
 - f. Coordinate with TACP if not receiving pilot tactical information.
- M4. S2 analyze the terrain (AMTP 71-3, Task 71-3-2001, 2003; FM 34-1)**
 - a. Determine ground avenues of approach, choke points, and obstacles.
 - b. Identify air avenues of approach.
 - c. Determine the impact of weather on air operations.
- M5. S2 analyze the enemy situation (AMTP 71-3, Task 71-3-2001, 2003, 2005; FM34-1)**
 - a. Determine size, disposition, location, and organization of enemy forces.
 - b. Identify current and anticipated enemy ADA capabilities, locations, and activities.
 - c. Identify potential courses of action.
 - d. Determine impact of weather on enemy ADA.
 - e. Pass potential targeting data to FSO.
- M6. S3 develop friendly situation (AMTP 71-3, Task 71-3-3002, 3003, 3007, 3011, 9002)**
 - a. Identify and provide location of forward elements, Forward Line of Troops (FLOT) if applicable.
 - b. Identify location of indirect fire assets, to include artillery, mortars, and Naval gunfire.
 - c. Identify helicopter areas of operation (AO), to include routes, lift, and attack

- operations.
 - d. Identify UAV (Unmanned Air Vehicle) AOs.
 - e. Determine and provide location of the FSCL (Fire Support Coordination Line) and/or any other indirect fire restrictions, such as no fire lines (NFL) or unit battle positions (BPs).
 - f. Identify fire restrictive measures.
 - g. Provide friendly maneuver plan, tactical situation, choke points, trigger points for air requests, timing of battle, and how battle tracking is being done.
 - h. Initiate continuous battle tracking procedures
- M7. Develop air control measures (AMTP 71-3, Task 71-3-3012, 3013, 602, 7001, 9002; FM 100-103)**
- a. Identify area for which the brigade is responsible (vertical, left, and right limits).
 - b. Identify users of the airspace and their requirements (army aviation, air force, artillery, ADA, etc.).
 - c. Identify areas impacting on air operations.
 - 1) Aviation unit and FARP locations.
 - 2) Artillery locations and planned fires.
 - 3) RPV launch and recovery sites and flight paths.
 - 4) ADA locations, engagement zones, and coverage.
 - d. Designate user priorities, restrictions, and control measures.
 - 1) Confirm coordinating altitude (from above ground level (AGL))
 - 2) Confirm air ROE.
 - 3) Identify and locate civilian airline routes.
 - 4) Determine restrictions and constraints such as "no fly zones".
 - e. Designate the following areas:
 - 1) High density airspace control zone (HIDACZ).
 - 2) Restricted Operations Zones (ROZ).
 - 3) Air ingress/egress routes.
 - 4) Airspace Coordination Areas (ACA).
 - 5) Contact Points/Initial Points (CP/IP).
 - 6) Helicopter air corridors.
 - 7) Minimum Risk Routes (MRR).
 - 8) Engagement Areas (EAs).
 - f. Designate air resupply areas/times for both air drop and air land operations.
- M8. Determine communication requirements (AMTP 71-3, Task 71-3-1101)**
- a. Identify locations which provide continuous communications with ground and air forces.
 - b. Determine communications requirements with ground forces, air forces, and Army aviation.
 - c. Identify ground retransmission requirements.
 - d. Coordinate with TACP to use AFAC as communications relay, if necessary.
- M9. Establish communications (AMTP 71-3, Task 71-3-1102)**
- a. Request air force frequencies (in ATO) and provide to army aviation and

- others, as required.
 - b. Coordinate for, and ensure distribution of, authentication tables [AKAC 1553] to army and air force elements, as needed.
- M10. Develop Air Defense Artillery control procedures** (AMTP 71-3, Task 71-3- 3007, 6001, 6002)
- a. Coordinate ADA operations through the S3.
 - b. Identify location and status of ADA units in brigade area.
 - c. Identify Air Defense Artillery (ADA) activation procedures (FM early warning net to stinger teams).
 - d. Maintain current ADA status and identify ADA changes of status/control measures and procedures.
 - e. Identify air ingress/egress routes
 - f. Identify Restrictive Operation Areas (ROAs) and weapons free zones.
- M11. Coordinate Army Aviation employment** (AMTP 71-3, Task 71-3-3011, 3012, 7001; FM 1-100; FM 1-111)
- a. Identify responsibilities, aviation tasks and plans.
 - b. Identify constraints/limitations in altitude and routes.
 - c. Determine capabilities, type aircraft, callsigns, communications, and authenticators.
 - d. Identify ROE.
 - e. Identify engagement areas.
 - f. Identify critical locations, such as:
 - 1) Landing zones.
 - 2) Forward Arming and Refueling Points (FARP).
 - 3) Battle Positions (BPs).
 - 4) Aerial observation positions (AOPs).
 - g. Identify Joint Air Attack Team (JAAT) specific considerations.
 - h. Aviation assets are incorporated into priority of fires and JSEAD operations.
- M12. S2 determines enemy ADA threat** (AMTP 71-3, Task 71-3-2003, 2005)
- a. Identify type and capabilities of enemy ADA systems (type munitions and anticipated targets).
 - b. Determine locations of enemy ADA systems.
 - c. Determine expected activities (movement/stationary) of enemy ADA systems.
 - d. Pass potential JSEAD targeting data to FSO.
- M13. Develop fire support plan** (AMTP 71-3, Task 71-3-3009, 3012, 9001, 9002; FM 6-20)
- a. FSO advises on fire support capabilities, limitations, and coordinating measures.
 - b. ALO is part of the fire support team and advises on air capabilities and limitations.
 - c. FSO and ALO coordinate on aircraft availability, munitions, capabilities, and effects.
 - d. FSO includes CAS in the fire support execution matrix.

- e. Fire support control measures are established.
 - 1) Battle positions for army aviation.
 - 2) No fire lines (NFL) and azimuth restrictions for artillery/mortars.
 - 3) Engagement areas (EAs) identified by terrain features for CAS.
 - 4) Other measures, such as FSCL, restrictive fire line (RFL), coordinated fire line (CFL), no-fire area (NFA), and restrictive fire area (RFA) established as appropriate.
- f. The following information is identified and maintained:
 - 1) Location of indirect fire assets.
 - a) Artillery guns.
 - b) Multiple Launched Rocket Systems.
 - c) Mortars.
 - 2) Capabilities of indirect fire assets.
 - 3) Missions, planned targets, and gun-target lines.
 - 4) Sequence of engagement.
 - 5) Maximum ballistic altitudes.
 - 6) Movement sequence (timing and new locations).
 - 7) ACAs.
 - 8) JAAT considerations.

M14. Plan JSEAD (Joint Suppression of Enemy Air Defenses) (AMTP 71-3, Task 71-3-2006, 3004, 9001, 9002)

- a. S2 identifies enemy ADA system.
- b. Determine ADA locations.
- c. Determine type of suppression.
- d. Determine type of JSEAD available.
- e. Integrate JSEAD with adjacent units.

M15. Analyze targets (AMTP 71-3, Task 71-3-2003, 2006, 3004, 9003, 9004; FM 6-20)

- a. S2 identifies enemy locations.
- b. Determine target type, ALO recommends targets for CAS attack.
- c. Determine the best method to defeat enemy targets.
 - 1) Determine constraints imposed by munitions available and ROE.
 - 2) Match munitions to type targets.
- d. Identify appropriate JSEAD requirements.
- e. Identify necessary suppression measures and appropriate suppression systems.
- f. Identify the impact of weather on air operations and enemy ADA.
- g. Establish engagement criteria.
- h. Determine methods to identify friendly locations.

M16. Determine ground priority targets (AMTP 71-3, Task 71-3-3005)

- a. S3/FSO establish target priorities.
- b. ALO recommends priorities for air attack.
 - 1) Identify target type
 - 2) Integrate target with threat to friendly forces, determining risk to air assets and risk of fratricide.

- M17. Develop ground scheme of maneuver** (AMTP 71-3, Task 71-3-3001, 3002, 3004, 3009)
- a. Identify forward line of troops (FLOT) and/or battle positions (BPs).
 - b. Identify location of elements forward of the FLOT or operating independently (ie. scouts).
 - c. Designate methods of marking friendly troop locations (Glint tape, VS-17 panels, smoke, etc.)
 - d. Designate engagement areas (EAs)
 - e. Establish maneuver restrictions, such as boundaries, axis of advance, and limitations.
 - f. Designate other control measures on troop movement or location, as required.
- M18. Continuously Analyze Intelligence Developments** (AMTP 71-3, Task 71-3-2003, 2006)
- a. Integrate strategic and higher echelon information and intelligence from all sources, such as:
 - 1) JSTAR.
 - 2) U2/TR1.
 - 3) Div/Corps G2.
 - b. Integrate information and intelligence from own unit's assets, such as:
 - 1) Reconnaissance elements/scout platoon.
 - 2) Ground assets/maneuver units.
 - 3) Immediate tactical information observed by aircraft in the area.
 - 4) Other available assets.
 - c. Disseminate combat information.
- M19. Initiate Close Air Support (CAS) request** (AMTP 71-3, Task 71-3-3--4, 3009; FM 90-21)
- a. Request supports ground scheme of maneuver.
 - b. Request supports fire support plan.
 - c. Request conforms to intelligence estimate.
 - d. S3, with ALO advice and assistance, identifies preplanned air requirements and prepares request.
 - e. If preplanned, request contains desired air control measures (ROZs, no fire areas, etc.).
 - f. If immediate CAS, S3A/ALO ensures request contains information necessary to identify requestor; priority; target type, size, and location; time required and desired results.
- M20. Determine what air is planned** (AMTP 71-3, Task 71-3-3004)
- a. S3 section obtains information from the ALO on planned air sorties in the ATO.
 - b. Determine type of aircraft, capabilities and munitions.
 - c. Determine when the aircraft will arrive and how long aircraft will remain on station.
 - d. Determine Electronic Warfare (EW) capabilities.
 - e. Determine projected sortie allocation.

M21. Determine what air is available (AMTP 71-3, Task 71-3-3004, 3009)

- a. S3 section coordinates with the ALO/TACP to determine the number of air sorties available for planning.
- b. Based on the ATO and communications with higher, the TACP identifies all aircraft available in the area during the needed timeframe .
- c. S3 section receives information on:
 - 1) Aircraft, capabilities, and munitions.
 - 2) When and how long aircraft will be available.
 - 3) EW assets and capabilities.
 - 4) Air priority of effort in the AO
 - 5) Projected tanker support
 - 6) Projected Airborne Warning and Control System.
 - 7) Projected fighter coverage
 - 8) Projected suppression coverage, JSEAD and Weasel.

M22. Determine target identification procedures (AMTP 71-3, Task 71-3-9004; FM 6-20)

- a. S3/FSO, in conjunction with the ALO/TACP, determine target marking procedures
- b. Consider the utility of using target marking methods such as laser, smoke, tracers, or target description.
- c. Identify easy to locate terrain features.
- d. Ensure distinction between target marking and method for marking friendly locations is understood.

M23. Develop contingency plans (AMTP 71-3, Task 71-3-3009, 9003, 9004; FM 6-20)

- a. Identify secondary targets for CAS.
 - 1) Identify alternate engagement areas.
 - 2) Prepare for second echelon engagement.
- b. Identify back-up communications (ie. fire support net/radios, relay to AFAC on FM, etc.)
- c. Coordinate for emergency control of CAS in event of ALO/ETAC KIA.
- d. Determine FSO/FO ability to control CAS in emergency.
- e. FSO plans alternate means to engage CAS targets.

M24. Organize for combat (AMTP 71-3, Task 71-3-3001, 3002)

- a. Establish chain of command.
- b. Identify locations provide uninterrupted communication with air and ground forces.
- c. Determine position of Air Liaison Officer within the command group for close coordination with the commander.
- d. Identify CAS final control authority.

PREPARATION

M25. Confirm aircraft allocation (AMTP 71-3, Task 71-3-3004, 3009)

The following information is confirmed as soon as possible:

1. Type of aircraft,
2. arrival times,
3. munitions,
4. number of sorties
5. On station time.

M26. Integrate CAS with Brigade Synch Matrix (AMTP 71-3, Task 71-3-3004, 3009, 9002; FM 6-20)

- a. CAS plan conforms with Decision Support Template.
- b. ALO and CAS are integrated into fire support rehearsals.
- c. CAS is synchronized with scheme of maneuver.
 - 1) Timing.
 - 2) Command or event driven sequence.
- d. CAS is synchronized with fire support plan.
 - 1) Timing.
 - 2) Command or event driven sequence.
 - 3) Targets.
- e. CAS is synchronized with Army Aviation.
 - 1) Timing.
 - 2) Battle positions.
 - 3) Engagement areas.
- f. Plan for continuous CAS missions.

M27 Fire Support Element integrates CAS (AMTP 71-3, Task 71-3-3004, 3009, 9002; FM 6-20)

- a. CAS plan is incorporated into the indirect fire plan and included in the fire support execution matrix.
 - 1) Sequence of attack.
 - 2) Timing.
 - 3) Engagement areas.
 - 4) Targets.
- b. Masking of indirect fires is minimized.
- c. CAS target list is appropriate for air engagement.
- d. Identify coordination considerations with Army Aviation.
- e. ALO and CAS are integrated into fire support rehearsals.

M28. Confirm airspace control measures (AMTP 71-3, Task 71-3-3012, 3013, 6002, 7001, 9002)

- a. Review airspace control order (ACO) and identify any changes to initial plan.
- b. Identify local airspace restrictions for areas, altitude, times, and routes.
- c. Specifically identify ROZs for army aviation operations (FARPs, BPs, etc.).
- d. Monitor status of airfields and specifically identify ROZs for air routes, air

- drop, and field landing strip resupply operations.
 - e. Specifically identify no fire areas due to ROE or friendly ground force operations.
 - f. Confirm ADA restricted operations areas (ROAs), weapons free zones, and weapons control status.
- M29. Confirm communications (AMTP 71-3, Task 71-3-1102)**
- a. Confirm frequencies from ALO/ATO and distribution of frequencies to supported/supporting units.
 - b. Confirm distribution of proper authentication tables [AKAC 1553] to appropriate units (army aviation, FSO, etc.)
 - c. Conduct communications check and confirm communications capability with air and ground forces.
- M30. Deconflict airspace (AMTP 71-3, Task 71-3-3012, 3013, 6002, 7001, 9002; FM 100-103)**
- a. ACO provides for deconfliction of overall airspace into brigade AO.
 - b. Within brigade AO, brigade plan minimizes potential fratricide situations.
 - c. Brigade plan minimizes the masking of fires for all elements.
 - d. Plan provides for reaction to aircraft ingressing and egressing the AO.
 - e. Confirm that all the following assets are operating in concert:
 - 1) CAS.
 - 2) Helicopters (attack, lift, and scout).
 - 3) Indirect fires (artillery, mortars, and naval gunfire).
 - 4) ADA.
 - 5) UAV.
 - f. FSO overlays indirect fire asset data (locations, gun target lines, maximum ordinate, etc.) on ACO measures to ensure deconfliction.
 - g. Monitor planned and outgoing fires.

**CLOSE AIR SUPPORT TASK LIST
TACP (TACTICAL AIR CONTROL PARTY)
BRIGADE**

PLANNING

- G1. Conduct mission analysis (MCM 3-3, Vol VIII)**
 - a. Determine specified tasks.
 - b. Determine implied tasks.
 - c. Determine area of operations (sector/zone).
 - d. Determine available time.
 - e. Identify specific Rules of Engagement (ROE) that apply to CAS/air operations.

- G2. Determine the commander's intent (MCM 3-3, Vol VIII)**
 - a. Understand the purpose of the mission.
 - b. Understand commander's intent for CAS.

- G3. Coordinate with S2 (MCM 3-3, Vol VIII)**
 - a. Identify all available information and intelligence on the following:
 - 1) Enemy forces.
 - 2) Terrain.
 - 3) Weather.
 - b. Determine what air intelligence assets are available.
 - c. Ensure continuous flow of combat information from aircraft to the S2.

- G4. Analyze the terrain (MCM 3-3, Vol VIII)**
 - a. Determine ground avenues of approach, choke points, and obstacles.
 - b. Identify air avenues of approach.
 - c. Determine the impact of weather on air operations.
 - d. Identify physical control features.
 - e. Determine the impact of the sun angle on air operations.
 - f. Determine the elevation of targets in feet.

- G5. Analyze the enemy situation (MCM 3-3, Vol VIII)**
 - a. Determine size, disposition, location, and organization of enemy forces.
 - b. Identify current and anticipated enemy ADA capabilities, locations, and activities.
 - c. Identify potential courses of action.

APPENDIX F

Input - Process - Output Relationships Among Ground Maneuver Tasks and TACP Tasks

Appendix F illustrates how the TACP acts as a mediating agent receiving input from the ground maneuver unit and providing output to the ground maneuver unit. Each TACP task is linked, in this presentation, to the ground maneuver tasks that provide input as well as the ground maneuver tasks that rely on the output of TACP tasks. It is important to note that these tasks are not performed on one time during the planning, preparation, and execution of a battle. As updates to various products become available a new cycle of input, process, and output events is triggered.

PLANNING

INPUT TASKS	TACP TASKS	OUTPUT TASKS
M1 Conduct Mission Analysis	G1 Conduct Mission Analysis	
M2 Determine CDRs Intent	G2 Determine CDRs Intent	
M3 Prepare Intel Estimate M4 S2 Analyze the Terrain M5 Analyze Enemy Situation M12 Determine Enemy ADA Threat	G3 Coordinate with S2	M15 Plan JSEAD
M3 Prepare Intel Estimate M4 S2 Analyze the Terrain M5 Analyze Enemy Situation	G4 Analyze the Terrain	M7 Develop Air Control Measures M15 Plan JSEAD
M5 Analyze Enemy Situation	G5 Analyze Enemy Situation	M15 Plan JSEAD
M6 Develop Friendly Situation M7 Develop Air Control Measures M10 Develop ADA Control Procedures M11 Coord Army Aviation Employment	G6 ID Air Control Measures	M7 Develop Air Control Measures M11 Coord Army Aviation Employment M28 Confirm Airspace Control Measures M30 Deconflict Airspace
M6 Develop Friendly Situation M11 Coord Army Aviation Employment	G7 Analyze Friendly Situation	M7 Develop Air Control Measures M10 Develop ADA Control Procedures M11 Coord Army Aviation Employment M13 Review Air Capabilities & Priorities
M4 Analyze the Terrain M8 Determine Commo Req. M11 Coord Army Aviation Employment	G8 Determine Communication Requirements	M9 Establish Communications
M9 Establish Communications	G9 Establish Communications	
M7 Develop Air Control Measures M10 Develop ADA Control Procedures M11 Coord Army Avn Employment	G10 Coordinate ADA Control Procedures	M7 Develop Air Control Measures M10 Coord, ADA Control Procedures

M6 Develop Friendly Situation M11 Coord Army Aviation Employment M13 Develop Fire Support Plan M17 Determine Ground Scheme of Maneuver	G11 Coordinate with Army Aviation	M11 Coord Army Aviation Employment M15 Plan JSEAD M28 Confirm Airspace Control Measures M30 Deconflict Airspace
M3 Prepare Intel Estimate M5 Analyze Enemy Situation M12 Determine Enemy ADA Threat	G12 Determine Enemy ADA Threat	M11 Coord Army Aviation Employment M14 Analyze Fire Support Plan M15 Plan JSEAD
M2 Determine CDRs Intent M15 Analyze Targets M16 Determine Ground Priority Targets M25 Confirm Aircraft Allocation	G13 Review Air Capabilities and Priorities	M15 Analyze Targets M27 FSE Integrates CAS
M13 Develop Fire Support Plan M16 Determine Ground Priority Targets M17 Develop Ground Scheme of Maneuver	G14 Analyze Fire Support Plan	M28 Confirm Airspace Control Measures M11 Coord Army Aviation Employment M15 Plan JSEAD M26 Integrate CAS with Bde Synch Matrix M27 FSE Integrates CAS
M3 Prepare Intel Estimate M5 Analyze Enemy Situation M14 Analyze Fire Support Plan M15 Plan JSEAD	G15 Plan JSEAD	M11 Coord Army Aviation Employment M14 Analyze Fire Support Plan M15 Plan JSEAD
M3 Prepare Intel Estimate M5 Analyze Enemy Situation M6 Develop Friendly Situation M10 Develop ADA Control Procedures M11 Coord Army Aviation Employment M12 Determine Enemy ADA Threat M14 Plan JSEAD M15 Analyze Targets M22 Determine Target ID Procedures	G16 Determine Risk to AFAC	M7 Develop Air Control Measures M10 Develop ADA Control Procedures M11 Coord Army Aviation Employment M13 Develop Fire Support Plan M14 Plan JSEAD M22 Determine Target ID Procedures

M3 Prepare Intel Estimate M4 Analyze the Terrain M5 Analyze Enemy Situation M11 Coord Army Aviation Employment M12 Determine Enemy ADA Threat M13 Develop Fire Support Plan M15 Analyze Targets M16 Determine Ground Priority Targets	G17 Analyze Targets	M11 Coord Army Aviation Employment M12 Determine Enemy ADA Threat M13 Develop Fire Support Plan M14 Plan JSEAD M22 Determine Target ID Procedure
M13 Develop Fire Support Plan M15 Analyze Targets M16 Determine Ground Priority Targets M17 Determine Ground Scheme of Maneuver	G18 Determine Ground Priority Targets	M11 Coord Army Aviation Employment M12 Determine Enemy ADA Threat M13 Develop Fire Support Plan M14 Plan JSEAD M22 Determine Target ID Procedure
M5 Analyze Enemy Situation M6 Develop Friendly Situation M7 Develop Air Control Measures M10 Develop ADA Control Procedures M12 Determine Enemy ADA Threat	G19 Identify Initial Point (IP)	M7 Develop Air Control Measures M8 Determine Commo Req. M28 Confirm Airspace Control Measures M30 Deconflict Airspace
M2 Determine CDRs Intent M4 Analyze the Terrain M5 Analyze the Enemy Situation M6 Develop Friendly Situation M13 Develop Fire Support Plan M15 Analyze Targets M16 Determine Ground Priority Targets M17 Develop Ground Scheme of Maneuver	G20 Analyze Ground Scheme of Maneuver	M8 Determine Commo Req. M10 Develop ADA Control Procedures M11 Coord Army Aviation Employment M13 Develop Fire Support Plan M14 Plan JSEAD M15 Analyze Targets M16 Determine Ground Priority Targets M22 Determine Target ID Procedures M23 Develop Contingency Plans M24 Organize for Combat M26 Integrate CAS with Bde Synch Matrix M27 FSE Integrates CAS

M3 Prepare Intel Estimate M5 Analyze Enemy Situation M12 Determine Enemy ADA Threat M15 Analyze Targets M18 Continuously Analyze Intel Developments	G21 Continuously Analyze Intelligence Developments	M5 Analyze Enemy Situation M12 Determine Enemy ADA Threat M15 Analyze Targets M18 Continuously Analyze Intel Developments
M19 Initiate CAS Request	G22 Initiate CAS Requests	M19 Initiate CAS Request
M15 Analyze Targets	G23 Determine What Air is Planned	M13 Develop Fire Support Plan M20 Determine What Air is Planned
M15 Analyze Targets	G24 Determine What Air is Available	M13 Develop Fire Support Plan M21 Determine What Air is Available M23 Develop Contingency Plans
M15 Analyze Targets M22 Determine Target Identification Procedures	G24 Determine Target Identification Procedures	M22 Determine Target Identification Procedures M23 Develop Contingency Plans
M5 Analyze Enemy Situation M8 Determine Commo Req. M13 Develop Fire Support Plan M17 Develop Ground Scheme of Maneuver M20 Determine What Air is Planned M21 Determine What Air is Planned	G25 Develop Contingency Plans	M8 Determine Commo Req. M13 Develop Fire Support Plan M17 Develop Ground Scheme of Maneuver M23 Develop Contingency Plans
M24 Organize for Combat	G26 Organize for Combat	M24 Organize for Combat
	G27 Designate Subordinate Responsibilities	M24 Organize for Combat

PREPARATION

INPUT TASKS	TACP TASKS	OUTPUT TASKS
	G29 Confirm Aircraft Allocation	M25 Confirm Aircraft Allocation
M11 Coord Army Avn Empoyment M13 Develop Fire Support Plan M17 Develop Ground Scheme of Maneuver M26 Integrate CAS with Bde Synch Matrix	G30 Confirm CAS integration with Bde Synch Matrix	M13 Develop Fire Support Plan M26 Integrate CAS with Bde Synch Matrix M27 FSE Integrates CAS
M11 Coord Army Avn Empoyment M13 Develop Fire Support Plan M26 Integrate CAS with Bde Synch Matrix M27 FSE Integrates CAS	G31 Confirm Plan with FSE	M13 Develop Fire Support Plan M26 Integrate CAS with Bde Synch Matrix M27 FSE Integrates CAS
M7 Develop Air Control Measures M10 Develop ADA Control Measures M11 Coord Army Aviation Employment M28 Confirm Airspace Control Measures	G32 Confirm Airspace Control Measures	M26 Integrate CAS with Bde Synch Matrix M27 FSE Integrates CAS M28 Confirm Airspace Control Measures
M9 Establish Communications M29 Confirm Communications	G33 Confirm Communications	M9 Establish Communications
M26 Integrate CAS with Bde Synch Matrix M27 FSE Integrates CAS M28 Confirm Airspace Control Measures M30 Deconflict Airspace	G34 Deconflict Airspace	M26 Integrate CAS with Bde Synch Matrix M27 FSE Integrates CAS M28 Confirm Airspace Control Measures M30 Deconflict Airspace
M3 Prepare Intel Estimate M4 Analyze the Terrain M5 Analyze Enemy Situation M12 Determine Enemy ADA Threat M18 Continuously Analyze Intel Developments	G35 Brief AFAC on Threat	